

ISSA Proceedings 2014 - What Is Informal Logic?

Abstract: In this keynote address at the eighth ISSA conference on argumentation I describe the emergence of two themes that I think are key to the constitution of informal logic. One is the development of analytic tools for the recognition, identification and display of so-called “non-interactive” arguments. The other is the development of evaluative tools for assessing deductive, inductive, and other kinds of arguments. At the end I mention several current interests of informal logic.

Keywords: argument analysis, argument appraisal, informal logic, non-interactive argument, reasoning appraisal

1. *Prefatory remarks*

Good morning.

If you consider this year’s ISSA keynoters, you can’t help but get the impression of a kind of Aristotelian *trivium* of argumentation theory – rhetoric, dialectic and logic. Professor Fahnestock represents rhetoric. Professor van Eemeren represents dialectic (at least the Pragma version of it). So Professor Blair must represent logic. Alas, I am no logician, as my friends are quick to tell me. What I will try to do is represent informal logic, which is a some-what different kettle of fish.

I must insert here two unplanned remarks. First, as you know, Frans van Eemeren did not represent dialectic in particular in his address yesterday. Instead, he took the point of view of an eagle flying high above, surveying the argumentation forest below – albeit a Pragma-dialectical eagle. Today, in contrast, I will be taking the point of view of a sparrow, surveying just one species of tree in the forest.

Second, in case you have read it in the conference program, you will know that, along with Ralph Johnson, I am credited with inventing and developing informal logic. I would be happy to take that credit. However, there are some dozens of other people, several of whom are in this room today and many who have stood on this dais at earlier ISSA conferences, who would rightly take exception. “What

about me?" they can say. No, informal logic's rise and development are due to the contributions of many scholars, and no one or two people can take credit for it. And in my talk this morning, of course, I speak only for myself.

2. Introduction

What motivated my topic - What is Informal Logic? - is my difficulty in coming up with a one or two sentence answer whenever someone asks me, "What IS informal logic, anyway?" or "What exactly is informal logic?"

It's not easy to say what informal logic is. I'm not entirely happy with the latest definition by Johnson and me that is quoted in the chapter on informal logic in HAT - the *Handbook of Argumentation Theory*, which is the successor to *FAT, Fundamentals of Argumentation Theory*. (By the way, the HAT chapter on informal logic is excellent.) Also, I'm quite unhappy with several features of the informal logic entries in the online *Stanford Encyclopedia of Philosophy*, and in *The Cambridge Dictionary of Philosophy* and *The Oxford Companion to Philosophy*. But instead of itemizing my differences, I want to use this occasion to spell out what I take informal logic to be.

I will do this by telling the story of two themes that feature in its development and that I think are central to what constitutes informal logic.

A word of warning before I start. You need to be wary of the notion that in the term "informal logic," the word 'informal' means "informal" and the word 'logic' means "logic." It's like the use of the term 'football' north of Mexico. In the USA and in Canada, the games called "foot-ball" don't much call for the players to control a ball with their feet. Informal logicians use variables, and talk about argument schemes, which are quasi formal. So informal logic is not strictly-speaking informal. And if you understand by logic the study of axiomatized deductive systems, informal logic is not logic. There is a story about how informal logic got its name, but it sheds no light on what informal logic is, so I won't tell it today.

3. Background

Let me start with a bit of background.

Informal logic, from the beginning in the 1970s and 1980s, has been motivated by goals of philosophy classroom instruction. Its subject matter was reasoning and arguments. And the enterprise was normative. The objective might be to improve

reasoning or critical thinking skills, or to assess the logic of everyday discourse. Reasoning and critical thinking skills were seen to be skills in judging the probative value of one's own reasoning and of others' arguments. Assessing logic was seen as recognizing, interpreting and evaluating the probative value of arguments. The *telos* of the enterprise was the formation of justifiable cognitive and affective attitudes, and the assumption was that understanding the norms of cogent reasoning and arguments, and acquiring some skill in their application, will contribute to that end.

The value in question was and is epistemic or probative merit – not communicative or rhetorical merit. A logically good argument, on this view, contributes to justifying adopting the attitude in question – be it a belief, a judgement, a disposition to act, an emotion, or whatever. Whether such justification is in some cases – or always – relative to audiences or circumstances was and is an open question.

We focused, in the beginning, on the arguments found in the print media: in newspapers and magazines. We did so for several reasons. For one thing, these were not the artificial arguments of traditional logic textbooks – arguments that were designed to illustrate elementary valid argument forms or for practicing the use of truth tables – like this one from Irving Copi's *Symbolic Logic* (1954):

If I work then I earn money, and if I don't work then I enjoy myself. Therefore if I don't earn money then I enjoy myself.

Those examples sent the wrong message to the students, who wanted to improve their ability to understand and assess the arguments used in public life. So the arguments we used for teaching purposes were about the topical issues of the day. They thereby served to demonstrate that arguments are thought to make a difference. Their content might be expected to be familiar to students and of interest to them, and the course would not have to presuppose technical background knowledge. Short examples could be found in letters to the editor; slightly longer ones in editorials; and even longer ones in opinion columns. One wag said we were teaching “newspaper logic.”

If you need a label for such writings, you might call them “non-interactive” (see Govier 1999). While targeting some set of readers, the writer is not engaged in a face-to-face dialogue with anyone. The writer might be responding to previous

comments and the arguments might anticipate and respond to various kinds of objections. So the text can be dialectical. However, any direct interplay is between the writer and that commentator or objector, not between the writer and just any reader. In the early days, informal logicians did not think to take these non-interactive pieces to be conversations or dialogues. Later, some were attracted to the view that such texts might fruitfully be *modeled* as having salient properties of two-party conversational interactions. Others, however, resisted that model as misleading for non-interactive contexts.

As teachers of what we originally thought of as practical or applied logic, we were interested in guiding our students in assessing the logic of the reasoning employed in the arguments expressed in these non-interactive writings. To do so required recognizing the presence of arguments and getting at their features. Hence, the first task was to devise guidelines to aid in finding and extracting arguments, and then displaying them for critical examination. The second task was to assess their cogency, either from the point of view of an onlooker or from the point of view of the target audience.

4. Analysis

I want to talk a bit about what we came to see as required to “get at” the arguments. This is the first theme in informal logic’s development. In a few minutes I will turn to the second theme, the question of the logical norms to be used in judging the arguments’ cogency.

We quickly learned that sending students off to find arguments requires them to recognize that a communication might well be serving other purposes. Often it will consist of just a report or a description or a non-argumentative narrative. Sometimes the text is confused or confusing, so that it’s unclear whether its author intends to be arguing. Sometimes the text makes some gestures in the direction of arguing, but on any interpretation the author’s reasoning is muddled.

So it turns out that the interpretive tasks of argument recognition and identification, on the one hand, and argument assessment, on the other hand, while they’re distinguishable, are not independent. That’s because whether the author may be taken to be presenting an argument can depend on whether an at least plausible argument can be attributed to what he or she has written. That can depend on whether there are sentences that may plausibly be taken to be functioning in probative support relationships with other sentences. So the

recognition and identification of arguments in such writings can require the logical assessment of argument candidates.

To recognize the presence of argument in non-interactive texts, we found that it helps to identify what might be called the *rhetorical situation* of the text. Doing so includes, when possible, noting such features as the identity of the author, the author's ethos, the intended audience, the occasion, the venue, the surrounding circumstances, the author's objectives, any applicable institutional norms, and the function of the discourse. It also helps, we found, to identify what might be called the *dialectical environment* of the text. Here I have in mind such things as debates, disagreements, controversies and so on surrounding the author's topic; alternative positions to the author's view; and any particular opponent with whom the author has a history of dispute.

It also helps to have some knowledge of the *habitats* of arguments in general, such as locations of controversies or other contexts where burdens of proof arise. It requires knowing the signs of arguments, such as illation-indicator terms, qualifiers and hedging expressions, plus an appreciation of their fickleness. And it can help to have a sense for what counts as a reason in the subject-matter in question.

By the way, speaking of fickle illative terms, have you noticed the non-illative use of 'so' that has become widely used by experts interviewed in the media? They'll start off their explanations with a "so": "So, our study shows that" It seems to function like taking a breath before speaking.

So, having recognized the presence of argument, next is the *identification* of the argument. We've established that it's a bird making those noises in the bushes, but what kind of bird is it? Identifying the argument means identifying its parts and their functions, and identifying its structure. Here are to be set out the reasons, broken down into premises, and the claims, identified as their conclusions. Qualifications and hedging are to be noticed. We debated the distinctions among patterns of direct support such as linked, convergent, cumulative, and chained or serial. (And I see from the conference program that this is still a live issue.) Also, aside from direct support for the main conclusion, what various defensive supporting functions might be being served? We distinguished among defending a *premise* against an objection, defending a *premise-conclusion* link against an objection, arguing against alternatives to the

conclusion, and defending the conclusion against arguments directly opposing it. Some called for, or allowed for, the reformulation of parts of the author's original text so that the roles of given sentences in the argument can be made more evident. And some argued that unexpressed but assumed or needed components have to be identified and inserted. It also helped here to have some familiarity with the subject matter.

Having developed guidelines to help understand the argument, we sought ways to portray that understanding so the argument could be methodically assessed. Many developed premise and conclusion numbering conventions that designate any sentence's place in the structure of the argument and/or its function in the argument. As well, many developed tree diagram conventions that do the same jobs. In my experience, often students who can easily master the numbering conventions have trouble working with tree diagrams, and vice versa, so having both seems pedagogically useful.

These tasks of recognition, identification, and display lead up to the assessment of arguments in non-interactive texts. The guidelines help any assessor to gain an understanding of the arguments and so be in a position to judge their probative merits.

By the way, the need to formulate such guidelines does not belong to informal logic in particular. It belongs to any approach that undertakes to analyze the arguments in non-interactive texts. Still, one thread in informal logic is the generation of practical advice for the recognition, identification and display of arguments in non-interactive discourse. This thread was and is practice-driven; and workable and economically teachable guidelines were and are its objective.

5. Appraisal

I now turn to the second theme that I'm claiming characterizes informal logic, namely the logical appraisal of these arguments.

To judge the logical merits of an argument, two kinds of decision are needed. Number one: how acceptable are the reasons? And number two: how well justified are the inferences from the reasons to the claims?

Some informal logicians, me among them, have thought that these questions can be asked from at least the following two perspectives. One perspective is that of an addressee or target of the argument. This can be a person or group to whom

the author is directing his or her argument. Or it can be anyone who is interested in the argument because he or she wants to decide whether to accept its conclusion. An addressee would be someone trying to decide on a course of action, such as how to vote, whom the arguer is trying to win over, or she'd be a scientist presented with evidence for a novel theory in her field, who wants to decide whether to give it credence. The other perspective is that of an onlooker. By an onlooker I mean someone who can detach himself or herself from interests or commitments touched by the argument, and who is in the position of judging how well the arguer makes his or her case to the audience in question. An onlooker would be a teacher grading a student's essay or a referee for a submission to an academic journal, each of whom has to decide how well the author has made his or her case relative to the burden of proof that's appropriate in the circumstances.

5.1 *Premise acceptability*

Let me first say a word about the informal logic criterion for the appraisal of reasons.

Any inference made in reasoning, or invited in an argument, is clearly only as good as what it starts from: namely, its reasons, expressed through its premises. Now, you must understand that most nascent informal logicians had been trained in the analytic philosophy of the mid-twentieth century, according to which good premises are true premises. So it required a break with our upbringing to abandon this tradition and follow some of Charles Hamblin's arguments in his 1970 monograph, *Fallacies*. Hamblin proposed that, for cogency, the truth of premises alone is not sufficient, since premises would have to be not only true but also known to be true. And truth is not necessary, either, he said, since "reasonably probable" premises would be good enough (see Hamblin 1970, Ch. 7). However, not many informal logicians went all the way with Hamblin's dialectical conception. According to it, the appropriate criterion (both necessary and sufficient) for premises is that they be accepted, in the sense that they be commitments of the addressee of the argument. But there's a problem for non-interactive arguments addressed to a diverse or unknown audience: *whose* commitments are we talking about? Furthermore, in some cases there are propositions available for use as premises that are obviously true and known by all concerned to be true. But in the absence of obvious truth, many informal logicians opted instead for the criterion that the premises at least must be *worthy*

of acceptance, that is, be *acceptable*. Of course, then the question is, "What counts as acceptability? That is, what makes claims that are used as premises in reasoning or arguments worthy of acceptance, and by whom?" Informal logicians have made serious, even booklength, attempts to answer that question.

5.2 *Logical assessment: Deductive validity and inductive strength*

Besides the acceptability of the reasons, there is the assessment of the consequence relations – the premise-conclusion links – of reasoning and arguments.

Our thinking about premise-conclusion relations developed along the following lines. Our education in analytic philosophy meant that our basic training in logic, a training almost everyone shared, was in the symbolic logics of the day – at a minimum, formal propositional logic and predicate logic. These are logics of the *deductive* inference relation called "validity." To use formal methods to test the inference relations of arguments in a natural language for deductive validity requires that the arguments be translated into standard logical form. However, doing so requires an understanding of standard logical form. We'd have to teach our students some propositional and predicate logic before they could even interpret these newspaper arguments. Moreover, we discovered that reformulating the newspaper texts usually required simplifying their sentences and thus changing the sense of the arguments. And finally, when inspected for conformity to the established rules of inference of deductive logic, such arguments often proved to be deductively invalid, even when, independently, they seemed to be cogent.

One hypothesis suggested to explain this last anomaly was that the arguer was making unexpressed assumptions, which, once added to the stated argument as additional premises, would render it deductively valid. The trouble is that, in many cases, the candidates for such needed missing premises are patently false. Often, a plausible argument's deductive validity could be saved only by adding problematic or false assumptions to it.

Of course many of these arguments were not intended to be deductively valid, but instead, to be inductively strong. Thus arguments in support of causal explanations, statistical generalizations from samples to populations, inductive analogies, and so on, could have their conclusions well-supported by their premises even though they were deductively invalid. So the options became that

an argument with acceptable premises would be logically cogent if it were either deductively valid or else, if deductively invalid, if it were inductively strong.

5.3 *The deductive/inductive dichotomy challenged*

An early question debated in the informal logic community was whether deductive validity and inductive strength are the *only* criteria for logically respectable inferences from reasons to claims. That is, are all arguments either deductive or inductive – is the deductive-inductive dichotomy exhaustive?

To be sure, that dichotomy can be made exhaustive by definitional fiat. Inductive reasoning can be defined as any reasoning that is not deductive. But the plausibility of this dichotomy relies on assuming a very broad conception of induction. For logicians, however, inductive reasoning provides support for its conclusions in degrees of probability specifiable numerically, or it is reasoning that relies on the assumption that experienced regularities provide a guide to unexperienced regularities. Here, for instance, is a passage from the introduction of the article on inductive logic in the *Stanford Encyclopedia of Philosophy* (Hawthorne 2014):

This article will focus on the kind of ... approach to inductive logic most widely studied by philosophers and logicians in recent years. These logics employ conditional probability functions to represent measures of the degree to which evidence statements support hypotheses. This kind of approach usually draws on Bayes' theorem, which is a theorem of probability theory, to articulate how the *implications of hypotheses about evidence claims* influences the degree to which hypotheses are supported by those evidence claims.

Well, that is a *not* a broad conception of induction. It leaves out reasoning in which probability in the sense of *plausibility* or *reasonableness* is the appropriate qualifier or where it makes no sense to express the strength of support as a numerical probability. It leaves out reasoning that relies on reasons other than experienced regularities. Denying that the deductive-inductive dichotomy is exhaustive implies that there can be logically good reasoning that is deductively invalid and to which the norms of induction narrowly defined do not apply.

Two examples were proposed early on in the informal logic community to show that some reasoning doesn't seem to fit either the deductive or the narrow inductive category. One example, due to John Wisdom (1991), was the reasoning

or the argument that Govier (1999) has called “a priori analogy.” Here’s an example:

Ellen’s essay merits a high grade by virtue of the lucid clarity of its organization and expression, the thoroughness of its argumentation and the cogency of its arguments. Jay’s essay is similarly clearly organized and expressed, its argumentation is similarly thorough and its arguments similarly cogent. So Jay’s essay merits a similarly high grade.

Generalized, this is the reasoning that, when a certain property belongs to something by virtue of that thing’s satisfying certain criteria to a given extent, and another thing of the same sort as the first one is judged also to satisfy those criteria to a similar extent, then one may infer that the property in question belongs to the second thing as well.

The premises of cogent reasoning or arguments from a priori analogy do not deductively entail their conclusions, because the second thing might have, besides the stated qualifying properties, others that disqualify it from having the feature in question. (Maybe Jay’s essay was submitted well after the due date, and was not on the assigned topic.) Since it can’t be known in advance what all the possible disqualifiers are, a list of them cannot be built into the criteria. Moreover, such reasoning or arguments are not narrowly inductive either, for there is no basis for assigning a numerical probability to their conclusions. Nor are they arguments from known regularities.

The other example, due to Carl Wellman (1971), is what he called “conductive” reasoning. It’s also known as balance-of-considerations reasoning. Here is an example:

The blueberries for sale today are ripe, fresh and wild, and I adore wild blueberries; so I should buy them. On the other hand, they’re outrageously overpriced and I don’t really need them; so I shouldn’t buy them. But I can afford them, and I need to indulge myself just now. So, everything considered, I should buy them.

In such reasoning, the reasoner takes one set of considerations to favour a claim, and at the same time takes another set of considerations to tell against that claim. The reasoner judges one set to outweigh the other, and on that basis judges the claim to be acceptable or unacceptable.

The premises of cogent balance-of-considerations reasoning or arguments don't entail their conclusions, because new information can tip the balance in the other direction, thereby affecting the legitimacy of the inference to the main conclusion. (For example, my wife tells me that there is no room in the refrigerator for the blueberries, or that she has already bought some.) But these are not narrowly inductive arguments either. There is no basis for assigning a numerical probability to the reasonableness of my decision to buy the blueberries. And again, there is no argument from known regularities here.

Based on examples like these two, many informal logicians concluded that it's false that all reasoning is either deductive or narrowly inductive. Some reasoning requires other criteria of inference appraisal than deductive validity and, for instance, statistical probability.

5.4 General tools for assessing inference strength

Most informal logicians did not address the question of what this other kind of reasoning is, beyond the judgment that it is not deductive and not narrowly inductive. Their motivation was classroom instruction, and the immediate need was useful teaching tools. So they adopted, adapted or invented various general methods of inference appraisal. These supposedly apply to reasoning and arguments of any sort, whether they are intended to be deductively valid, or inductively strong, or to belong to neither of these two categories.

At least five such methods turn up in the informal logic literature. I'll describe each of them very briefly.

5.4.1 Fallacy theory

One early proposal was that an argument free of fallacies is probatively sound, and in particular, its consequence relation is fine so long as it is free of inferential fallacies. This answer leads straight to fallacy theory, and that was an early preoccupation of informal logicians. That fact led some people, understandably but mistakenly, to identify informal logic with the study of informal fallacies.

A broad consensus emerged that fallacies are not patterns of mistaken reasoning. Rather, they are errors in the sense of misfires or misuses of otherwise legitimate patterns of reasoning. What distinguishes the informal logic approach to fallacies is that not all fallacies are viewed as dialectical or rhetorical misdemeanors: many are seen as particular errors of reasoning. Some are confused deductions, some

hasty inductions, and some other types of malfunctioning reasoning. I need to add that there are some informal logicians who deny that the concept of fallacy has any legitimate application.

5.4.2 *Acceptability, relevance, sufficiency*

Another general method of assessment is to use the triad of Acceptability, Relevance and Sufficiency-ARS. Acceptability, as I have already noted, is a criterion for premises. Relevance and sufficiency are criteria for the adequacy of the link between premises and conclusion: the reasons offered must be probatively relevant to the conclusion, and they have to supply enough of the right kinds of evidence to justify accepting it.

It's been argued that relevance is redundant, since sufficiency already presupposes it. You can't have enough evidence unless what you count as evidence is already relevant. That is true. However, people's arguments sometimes include irrelevant premises. Those have to be identified and set aside before judging the sufficiency of the relevant ones that remain.

Sufficiency has become seen to require not only reasons that directly support a claim but also those that support it indirectly, by way of refuting or weakening objections or criticisms of various kinds. How far that indirect support should go is a matter that continues to be debated.

The ARS criteria are general, in that deductively valid and inductively strong reasoning and arguments, as well as those with other kinds of good consequence relations, all will pass their test. They have been widely adopted as teaching tools and their introduction has led to scholarly reflections on all three concepts.

Some people, again mistakenly, identify informal logic with the ARS method of argument assessment.

5.4.3 *Inference warrants*

Some informal logicians have been attracted to Stephen Toulmin's (1958) concepts of warrant and backing as an account of what justifies reasoning and argument inferences in general. The idea is that any particular inference relies on a general rule or warrant that licenses inferences of that sort. An inference is justified provided that its warrant is itself defensible, that is, can be backed up if questioned. Although Toulmin did not emphasize this point, a warrant can be a deductive rule of inference, such as *modus ponens*, or an inductive principle, as

well as such things as rules of practices. So warrant justification is general too.

An obvious objection to this approach is that the backing of a warrant is itself an argument, thereby involving an inference that must rely on another warrant that can be backed up if questioned – and so there begins an infinite regress. A reply to this objection is that, while an infinite regress of warrants and backings is in principle possible, in practice, in short order one arrives at backing that is either clearly solid or obviously dubious.

5.4.4 *Testing by possible counterexamples*

A fourth general method that informal logicians have used for evaluating the inferences of reasoning and arguments is testing them by means of counterexamples.

The method is to think of considerations that are consistent with the given reasons but inconsistent with the claim being inferred or argued for. Depending on whether any such counterexamples are conceivable, and if so, either probable or plausible to some extent, the reasoning can be determined to be deductively valid, or invalid but with some degree of inductive strength, or invalid but more or less reasonable.

This method is only as good as the assessors' ability to imagine possible counterexamples and the accuracy of their judgements of the possibility, probability, or plausibility or reasonableness of such counter-examples. This ability often depends on subject-specific knowledge about the topic of the reasoning or argument in question.

5.4.5 *Reasoning or argument scheme theory*

I call the fifth method, "argument scheme theory." Douglas Walton is one theorist who has proposed an account of non-deductive, non-inductive kinds of reasoning. According to Walton (1996), such reasoning is presumptive. That is, it is reasoning that establishes, or shifts, a burden of proof. A general approach for assessing deductive, inductive and presumptive reasoning, according to Walton and others, is the use of reasoning or argument schemes.

A reasoning or argument scheme is a generalization of a token of reasoning or argument. I gave examples of two such schemes earlier – the schemes for reasoning by a priori analogy and the scheme for balance-of-considerations reasoning.

Such generalizations can be deductive, inductive or presumptive. Scheme theorists think it is reasonable to accept the conclusion of an instance of such a scheme as the consequence of its premises, so long as the questions that test its vulnerable features – the so-called “critical questions” – are answered satisfactorily in the given case.

These five methods – freedom from inferential fallacy; the sufficiency of relevant offered reasons; justification by an adequately-backed warrant; passing the test of counter-examples; and being an acceptable instance of a reasoning scheme – are all *general* methods of assessing the inferences of reasoning or arguments. That is, they apply to reasoning or arguments with supposed deductive validity, or inductive strength, or other kinds of cogency. Whether these five initiatives are compatible, equivalent or otherwise related, whether they are correct, and whether the list is exhaustive, all remains to be seen.

6. Other developments, and conclusion

So far I have described two themes that have animated informal logic. One is the development of guidelines for the analysis of the reasoning in non-interactive arguments. The other is the articulation of generally applicable methods for evaluating the reasoning – that is, the reasons and the inferences – exhibited in arguments. My contention is that these are the principal defining threads of informal logic. Fortunately, for me, and for you, I don’t have time to defend that assumption on this occasion. I just have time to add a few footnotes.

One footnote is that informal logicians came to realize that, although they had started out analyzing arguments in non-interactive texts for teaching purposes, what they are also interested in is the logic of the non-deductive, non-narrowly-inductive reasoning employed in any arguments, in whatever setting they are communicated (whether a dialogue, a group discussion, or a speech), by whatever mode they are communicated (whether orally or in writing, visually, or mixed-modally), for whatever purpose they are communicated (whether for persuasion, or disagreement resolution, or communication repair, or justification, or any other purpose), and with whatever subject-matter they are concerned.

A second footnote is that, belatedly, at least some informal logicians have come to appreciate the need to understand the rhetorical functions of communication in order to recognize and identify arguments, and in order to understand the nature and force of the reasoning expressed in them.

And a final footnote: I hope it is clear that informal logic does not aim to account for all the pragmatic and communicative properties of arguments. Nor is it a theory of argumentation, understanding by such a theory an account of the dynamics of, and the norms for, various kinds of exchanges of arguments for various purposes. It does not address the psychology, sociology, or politics of exchanges of arguments. If informal logicians happen to take up such topics, as some do, they do so flying other colours, such as “argumentation theorist.”

Well, it is high time for me to stop. By now I hope you can see why I have difficulty conveying an understanding of what informal logic is in a couple of sentences. If you will allow my remarks this morning to stand as a long footnote, my summary would run as follows. Informal logic is the combination of two related things. It is the development and justification of practical guidelines for recognizing, identifying and displaying the reasoning expressed and invited in arguments, especially arguments found in non-interactive discourse or other modes of non-interactive communication. And it is the development and justification of the probative norms applicable to the reasons, and applicable to the non-deductive, non-inductive inferential links, employed in the reasoning that is expressed or invited in any argument.

Thank you.

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References

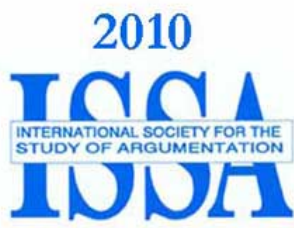
- Copi, Irving M. (1954). *Symbolic logic*. New York: The Macmillan Company.
- Govier, Trudy (1999). *The philosophy of argument*. Newport News, VA: Vale Press.
- Hamblin, C.L. (1970). *Fallacies*. London: Methuen.
- Hawthorne, James (2014). “Inductive logic”, *The Stanford Encyclopedia of Philosophy* (Summer 2014 Edition), Edward N. Zalta (ed.), forthcoming
URL = <<http://plato.stanford.edu/archives/sum2014/entries/logic-inductive/>>.
- Toulmin, Stephen N. (1958). *The uses of argument*. Cambridge: Cambridge University Press.

Walton, Douglas N. (1996). *Argument schemes for presumptive reasoning*. Mahwah, NJ: Lawrence Erlbaum Associates.

Wellman, Carl (1971). *Challenge and response, Justification in ethics*. Carbondale and Edwardsville: Southern Illinois University Press.

Wisdom, John (1991). *Proof and explanation, The Virginia lectures* (ed. by Stephen F. Barker). Lanham, MD: University Press of America. (Originally delivered at the University of Virginia in spring 1957.)

ISSA Proceedings 2010 - Logic In The Pragma-Dialectical Theory



1. Introduction - Logic in the Pragma-Dialectical Theory [i]

Over the past fourteen years the proponents of the Pragma-Dialectical[ii] approach to argumentation have devoted the lion's share of their efforts to working out in detail how the rhetorical properties of arguments and argumentation can be accommodated within their pragma-dialectical framework. By now, the dialectical and rhetorical properties of arguments have been theoretically integrated to their satisfaction (see van Eemeren and Houtlosser 2009, van Eemeren 2010). Thus, of the classical triad - logic, dialectic and rhetoric - two members have been accounted for in the theory. What, one might ask, of the third member: logic?

In the early development of the Pragma-Dialectical approach, its authors saw themselves as needing to differentiate their dialectics-oriented program from the then-dominant paradigms of logic and rhetoric (see van Eemeren & Grootendorst 1984 [*Speech Acts in Argumentative Discussions*], hereafter *SAAD*, pp. 12-13, 16). Even in the latest version of the theory, the authors are critical of the Perelmanian approach, representing a certain take on rhetoric, and the Toulminian approach, representing a certain take on logic (see van Eemeren & Grootendorst 2004 [*A Systematic Theory of Argumentation*], hereafter *STA*, pp. 44-50). They have, however, come to terms with at least some features of

rhetoric, namely those that clearly can and do play a role within argumentative discussions aimed at resolving a difference of opinion in a reasonable way. The time has come, I contend, for the proponents of the Pragma-Dialectical approach to undertake the effort of sorting out with similar care their conception of logic and its role in their theory.

The thesis of this paper is that the Pragma-Dialectical handling of logic does need some sorting out. I will argue, in particular, for the following propositions, which together support this thesis:

- (1) The Pragma-Dialectical theory's procedure for making unexpressed premises explicit is, due to the conception of logic employed, incompatible with the theory's use of argumentation schemes in the analysis and evaluation of arguments.
- (2) The problems with argumentation schemes aside, the explicitization procedure proposed in the Pragma-Dialectical theory is limited in scope due to the kind of logic it relies on.
- (3) Some Pragma-Dialectic statements about logic are puzzling; the working conception of logic is unclear; and any case it is too narrow.
- (4) The Pragma-Dialectical theory requires a clear and consistent approach to logic.

To the support for these propositions I now turn.

2. First proposition

- (1) The Pragma-Dialectical theory's procedure for making unexpressed premises explicit is, due to the conception of logic employed, incompatible with the theory's use of argumentation schemes in the analysis and evaluation of arguments.

According to the Pragma-Dialectical theory, in order to assess the reasoning used in texts of arguments that a proponent or opponent has put to work in defending or attacking a standpoint, it is necessary (when the parties are absent) first accurately to reconstruct the arguments so the reasoning is fully explicit. The method, in the case of arguments that are not deductively valid as they stand, but are reasonably taken as meant to be deductively valid, is to add the premise(s) that would render them deductively valid (the logical level) and at the same time are maximally informative and consistent with the arguer's expressed commitments (the dialectical level) (SAAD, pp. 141-149). (Below I will take issue with this method, but accept it for now.)

“(a) The explicitized premiss[**iii**] must be a statement which, if added to the

speaker's argument as a premiss, would make the argument valid (and thereby prevent a violation of the maxim of relation.)" (SAAD, p. 141)

It is clear from the discussion preceding the above passage that the authors mean by *valid* here, *deductively valid*. For they have just finished a review of alternative methods of supplying unexpressed premises, and one of the lessons they take is that rendering the argument valid by the rules of propositional logic is not sufficient – but not that it is not necessary (see SAAD, pp. 123-129). This is evidence, then, that, at least in SAAD, by 'logic' the authors of the Pragma-Dialectical theory mean either deductive logic in general or formal deductive logic in particular.

The theory envisages not only arguments that their proponents expect to be deductively valid but also arguments that employ argumentation schemes. In their introduction to the topic of argumentation schemes as tools for the analysis and evaluation of arguments, in a paragraph that begins emphasizing the importance of avoiding contradictions (van Eemeren & Grootendorst 1992 [*Argumentation, Communication and Fallacies*], hereafter ACF, p. 95), the authors of ACF make the following comment:

"[a] In order to assess the quality of the individual arguments, it must be determined whether the underlying reasoning is logically valid and starts from premises that are acceptable. [b] There is no need, however, to immediately assume that somebody who puts forward an argument is indeed involved in demonstrating how the conclusion is logically derived from the premises. [c] Still, in some way or other, the step from the arguments to the standpoint must be such that the acceptability of the premises is transferred to the conclusion" (ACF, p. 96, my numbering is added in brackets.)

Appended to sentence [c] is the following footnote:

"On this point, logic has not much to offer. In spite of important differences in the way logicians define the object, scope, and method of their work, they seem unanimous in thinking that their concern with validity is about formal rather than substantive relations between premises and conclusions, syntactico-semantic rather than pragmatic aspects, reasoning in isolation rather than in context, implications rather than inferences and – most important at this juncture – transmission of truth rather than acceptance." (ACF, p. 96, Note 3.)

This footnote makes it abundantly clear that the authors here understand by logic

formal deductive logic. It is unlikely that they had informal logic in mind. For not only do they make no reference to informal logic, but also by time *ACF* was being written, informal logicians had challenged every one of the assumptions attributed in this footnote to “logicians” *simpliciter*, and so while *informal* logic might well have had much to offer to account for the step from arguments (i.e., reasons or premises) to standpoints (i.e., conclusions) whereby the acceptability of the premises is transferred to the conclusions, it was not discussed. (For pertinent informal logicians, see, among others, Scriven 1976 and Fogelin 1978 both cited in *SAAD*’s references, and Govier 1987 cited in *ACF* ’s references, but see also Johnson & Blair 1978 and Govier 1985.)

Given these passages, the authors cannot be conceiving that grounds for a justified transference of the propositional attitude of acceptance from premises to conclusion is a topic of formal logic. So, since the quoted passages occur in a section titled “Argumentation Schemes as Dialectical Tools,” one is led to conclude that they hold that it is by means of argumentation schemes whereby the acceptability of the premises is transferred to the conclusion (in non-deductive arguments).

Argumentation schemes are not in every case to be instantiated by deductively valid arguments, because in many cases the arguments that exhibit them, even when they are completely cogent, will not be deductively valid – and for good reason. It is always in principle possible in such cases for there to be new information that is consistent with the acceptability of their premises yet which is incompatible with the acceptability of their standpoint. In this sense, such argumentation schemes are deductively invalid, or perhaps better, are non-deductive.

But arguments that are instances of such non-deductive argumentation schemes can be and often are incompletely expressed, no less than are arguments that are intended to be or may be taken to be deductively valid. In order to assess such arguments found in texts where the authors are not present, the unexpressed components need to be made explicit just as do those of incomplete arguments intended to be or fairly supposed to be deductively valid. How is that to be done? If the incomplete arguments that are instances of such argumentation schemes are reconstructed by the addition of premises that render them deductively valid, the result cannot be an instance of a non-deductive argumentation scheme. So if the method for reconstructing unexpressed premises is retained without change it

cannot be applied to arguments exhibiting non-deductive argumentation schemes with unexpressed premises without distorting them by altering their character.

Here one might object, following Gerritsen (2001, p. 73), that, "argument schemes are defined in pragma-dialectics as specific sorts of deductively valid arguments." In that case, there would be no tension in the Pragma-Dialectical theory between the deductivism of formal logic and envisaging the use of argumentation schemes. However, Gerritsen's interpretation is surprising. Instances of the three basic argumentation schemes introduced in *ACF* (pp. 96-97) – symptomatic, analogical and causal argumentation – are typically defeasible. Certainly the examples the authors use to illustrate these three schemes are. "As Daniel is an American (and Americans are inclined to care a lot about money), he is sure to be concerned about the costs" (*ACF*, p. 97) will be a good inference unless Daniel is not a typical American in this respect, or unless Daniel is travelling on his company's expense account, etc. "The method I propose worked last year (and this problem is similar to the one we had last year), so it will work again" (*ACF*, p. 97) will be a good inference unless there are new conditions surrounding the problem this year, or unless the method worked last year only because of unusual conditions then, etc. "Because Tom has been drinking an excessive amount of whiskey (and drinking too much whiskey leads to a terrible headache), Tom must have a terrible headache" (*ACF*, p. 97) will be a good inference unless Tom has already taken a painkiller, or unless Tom has an unusual tolerance for excessive amounts of whiskey, etc. In none of these examples do the premises deductively imply the conclusion. Moreover, the critical questions that the authors envisage associated with each argumentation scheme (see *ACF*, pp. 162 ff.) anticipate that arguments exhibiting any of the schemes can in principle be defeated. So I am skeptical of Gerritsen's interpretation. However, if she is right and the authors of the Pragma-Dialectical theory do hold that the schemes of symptomatic argumentation, analogical argumentation and causal argumentation represent "specific sorts of deductively valid arguments," then my claim of incompatibility between the theory's deductivism and its appeal to schemes in the interpretation of arguments does not hold. However, in that case, the theory has to face the criticism that the argumentation schemes it relies on are on the face of it non-deductive.

3. *Second proposition*

(2) The problems with argumentation schemes aside, the explicitization procedure

proposed in the Pragma-Dialectical theory is limited in scope due to the kind of logic it relies on.

The procedure for explicitizing unexpressed premises can be applied only to arguments that are plausibly interpreted as offered by their proponents as supposedly deductively valid. However, setting aside argumentation scheme theory, there are many kinds of arguments that are not offered by their proponents as supposedly deductively valid, but that are offered as nevertheless cogent. That is, their premises are purported to have sufficient probative force that one who accepts them is thereby justified in accepting their conclusions. Such arguments can be and often are presented with elisions, on the assumption that the interlocutor or reader can readily supply the unexpressed components; yet (to repeat) even when fully reconstructed they are not, and are not supposed to be, deductively valid. Examples include (but are not restricted to) various kinds of inductive arguments such as enumerative inductions, generalizations from samples to populations and inductive analogies; arguments to the best explanation; arguments from a priori analogy; evaluative arguments such as those applying normative criteria to cases or balance of considerations arguments. All of these kinds of arguments share the property that tokens of them can be fully explicit and cogent and yet not be deductively valid. That is because to be counted as deductively valid they would require the additional premise that the evidence given is the total evidence or that all other things are equal, when in practice that premise cannot be known to be true or cannot reasonably be committed to. As a result, to reconstruct incompletely expressed tokens of such patterns of argument so as to render them deductively valid – whatever form the selected unexpressed premise might be given – is to misrepresent the nature of the force of the grounds they supply in support of the standpoints in defence of which they are offered. To reconstruct them by adding a deductive validity-ensuring unexpressed premise to the effect that in the given case there is no further relevant evidence or that all things are equal requires attributing an unreasonable commitment to the proponent of the argument.

This conclusion will hold even if one insists, as the authors of Pragma-Dialectics do, that the missing premise supplied by the analyst should not be the “logical minimum” (namely the associated conditional of the argument consisting of the stated premises as the antecedent and the conclusion as the consequent). The authors require that the missing premise(s) be the “pragmatically optimal” proposition in the circumstances, namely, the one that renders the argument valid

while also being a commitment of the speaker and the most informative of the validating premise candidates at hand in the context (see ACF, pp. 66-67). The problem is that if the argument aims at (i.e., the speaker is committed to) no more than a plausible, or a presumptive, or a probabilistic inference from premises to conclusion, then even the pragmatically optimal unexpressed premise will misrepresent the inference by turning it into a deductively valid one, one in which, given the premises, the conclusion *must* follow, not one in which it only plausibly, presumably or probably follows.

To be sure there are those, such as Groarke (1992, 1995, 1999, 2002), who defend the strategy of analyzing arguments with unexpressed premises as if their proponents were committed to their being deductively valid – an approach Godden has termed “reconstructive deductivism” (Godden 2005, p. 168). In a carefully-argument examination of Groarke’s reconstructive deductivism, Godden rejects that position, and I find his case against it to be thoroughly convincing. This is not the place to enter that debate except to note that if the proponents of the Pragma-Dialectical approach to reconstructing unexpressed premises are committed to reconstructive deductivism, they need to answer Godden’s case against it.

If the anti-deductivist position is correct, then the Pragma-Dialectical method for supplying unexpressed premises for incompletely expressed arguments, because it is tied to deductive validity and hence to deductive logic, perhaps even to formal deductive logic, can be used for only one of many patterns of argument (or, alternatively, presupposes only one of many types of standards of inference assessment), and some other method or methods need to be devised that work for the others. Alternatively, a different method needs to be devised that can be used generally for all patterns of incompletely expressed arguments.

Advocates of the Pragma-Dialectical theory should be sympathetic to this suggestion, for already in their original formulation of the theory they anticipated the possibility that the choice of logic would have implications for the reconstruction of unexpressed premises.**[iv]** In *SAAD* they wrote, “The choice of one logic or another may have consequences for the supplementation of incomplete arguments” (p. 128). At that point they were writing about the differences among, for example “propositional logic, predicate logic and modal logic” (*ibid.*) – all varieties of deductive logic. So they were thinking of “logic” as “deductive logic”: “Where the argument is one which appears intuitively to be

valid but whose validity cannot be demonstrated in any of the available logics, it may indeed be exceedingly difficult to decide what sort of addition needs to be made" (*ibid.*). However, there seems here nothing in principle preventing them from expanding the class of "available logics" to include also non-deductive norms of inference "validity."

4. *Third proposition*

(3) Some Pragma-Dialectic statements about logic are puzzling; the working conception of logic is unclear; and any case it is too narrow.

The ideal model called a Critical Discussion (SAAD, p. 17) calls for arguers to behave as "rational discussants," which entails engaging in argumentative discussions in accordance with a system of speech act rules that produce a regulated interchange between conflicting parties designed to lead to a resolution of their dispute in a reasonable way (see SAAD, p. 18, pp. 152-153). Among these rules is one that implies that the parties are to produce arguments that are (*inter alia*) *valid* (Rule 10, SAAD, pp. 168-169).

As we have seen, by 'logic' the authors of the Pragma-Dialectical theory clearly mean 'formal deductive logic' (see the footnote from ACF, p. 96, quoted above, or SAAD, pp. 123-129) and their unexpressed premise explicitization procedure invokes deductive validity. In such contexts 'valid' would have the technical sense in which it is commonly used in formal deductive logic: not to accept the standpoint of such an argument having accepted its premises commits one to a contradiction.

When it comes to their discussion of fallacies, which is a principal component of ACF, the authors characterize fallacies as violations of the pragmatic rules that must be followed if an argumentative discussion is to resolve a difference of opinion in a reasonable way. They distinguish fallacies according to the rules that apply to each stage of such a discussion. The fallacies that occur in the argumentation stage (which is that component of the discussion where the interlocutors produce arguments and respond to one another's arguments) are divided into two groups: the ones that typically occur when using argumentation schemes (Chapter 15), and the ones that occur when using logical argument forms (Chapter 16). We might therefore hope to gain further insight into the authors' understanding of logic and its role in argumentation from these chapters.

Chapter 16, "Fallacies in Utilizing Logical Argument Forms," begins with the

sentences:

“For a conclusive defense of a standpoint it is necessary for all the arguments used in the discourse to be logically valid. This validity requirement relates to the *form* of the arguments, which should be such that if the premises are true the conclusion of the argument cannot possibly be false.” (ACF, p. 169.)

In other words, arguments must be formally deductively valid if their conclusions are to be conclusively defended. That is a reasonable position to take, given that formal deductive validity *guarantees* that truth (or acceptance) is transferred from premises to conclusion, and by such arguments the defense of the conclusion can be *conclusive* in the sense of being impossible to overturn, or reject (given that the premises are true, or accepted). By the term ‘logic’ in this context we can thus again take the authors to mean deductive logic, and in fact, more particularly, formal deductive logic (since they say, and stress, that it is the *form* of the arguments that guarantees their validity).

One might thus expect a contrast between Chapter 15 of ACF, which deals with fallacies of argument schemes, and Chapter 16, dealing with fallacies of logical argument forms, along the lines of a contrast between the “logic” of a conclusive defense of a conclusion and the “logic” of a non-conclusive defense of a conclusion. At first, Chapter 15 seems to suggest such a contrast. The authors write,

“In order to adequately support the standpoint, in every single argumentation [i.e., each separate argument (see ACF, p. 73)] that is put forward in defense of a standpoint the right kind of argumentation scheme must be used and this scheme must be used properly.” (ACF, p. 158.)

Since “adequate” support need not be “conclusive” support, a contrast between argument schemes, which can supply “adequate” support, and deductively valid argument forms, which are needed for “conclusive” support, might seem in the offing. However, just a paragraph later, we find the authors saying the following:

“In case there are enough mutually acceptable starting points and argumentation schemes and it is perfectly clear what they are, it is, in principle, possible to answer the question whether an argumentation constitutes a *conclusive* defense for a standpoint. If both the identification procedure and the testing procedure produce a positive result, the standpoint has indeed been *conclusively* defended. (ACF, p. 159, my emphasis)

...

"A party may not regard a standpoint as conclusively defended if the defense does not take place by means of an appropriate argumentation scheme that is correctly applied." (Ibid., emphasis in the original.)

So satisfying the conditions of the proper use of argumentation schemes (i.e., appropriate scheme, correctly applied) is a necessary condition of "conclusive" support no less than is instantiating deductively valid argument forms. However, the force of these two uses of 'conclusive' is on the face of it different. For to accept the premises of a deductively valid argument but reject its conclusion is to commit oneself to a contradiction, whereas to accept the premises of an appropriate and correctly used argumentation scheme but reject its conclusion does not necessarily commit oneself to a contradiction, since one can at the same time argue that an exception occurs in the case at hand. Some explanation of the use of the same term - 'conclusive' - for different judgements seems called for.

Notice that some of the claims here quoted from the two chapters in *ACF* are incompatible. It cannot be true both that, "For a conclusive defense of a standpoint it is necessary for all the arguments used in the discourse to be logically valid." and that, "A party may not regard a standpoint as conclusively defended if the defense does not take place by means of an appropriate argumentation scheme that is correctly applied" - unless the only kind of appropriate argumentation scheme is a one that is (deductively) logically valid, i.e., one in which the form of the argument is such that "if the premises are true the conclusion cannot possibly be false." But the authors clearly do not mean to restrict the class of appropriate argumentation schemes to logically valid argument forms, for they discuss "argument from authority," "argument from analogy" and "argument from consequence" (*ACF*, p. 160) as all potentially appropriate argumentation schemes, yet instances of none of them need be formally valid. This inconsistency is removed in *STA*, where these two criteria - validity and proper scheme used correctly - are clearly presented as a disjunctive set, not a conjunctive set as in *SAAD* and *ACF*.

The authors of the Pragma-Dialectical theory allow for fallacies that are mistakes of inductive inference (violations of the rules requiring that arguments have acceptable justificatory or refutatory force), such as *post hoc ergo propter hoc* and hasty generalization (*ACF*, pp. 164-165). If there are such fallacies, there must be instances of causal arguments and arguments making generalizations that are not fallacious, but cogent. But typically even the best of such arguments

are open to the possibility that unexpected new evidence will undermine the inference, and thus they are not subject to deductive closure. Presumably such arguments have some sort of “logical” structure, albeit its instances will not be formally valid. Yet the authors do not discuss such a logic.

As already noted, in some places the Pragma-Dialectical account clearly means by ‘logic’ formal deductive logic, and its authors use the term ‘logically valid’ (e.g., *ACF*, p. 60), presumably meaning “deductively valid” or “formally deductively valid.” At the same time, the authors reject “a dogmatic commitment to deductivism” (*ACF*, p. 60, Note 2). Although they do not define this term, on one reasonable interpretation it is the view that only arguments with a premise-to-conclusion implication that is deductively valid are acceptable. Thus it might be reasonable to interpret the authors as open to other logical norms besides deductive validity (and *a fortiori*, formal deductive validity). But if so, then they cannot take logic to consist exclusively of formal deductive logic. In any event, they nowhere offer such norms or even mention their possibility.

The theory allows that argumentation schemes can constitute the warrants for the inferences from the acceptance of premises to the acceptance of standpoints. That is, they can account for the justificatory or refutatory force of a premise relative to a standpoint. On a broad conception of it, logic is, at least in part, the study of the norms that justify implication relationships – including (among others) those asserted to hold between the premises and conclusions of arguments. Accordingly, on the Pragma-Dialectical account of argument schemes, using this broad conception of logic, argumentation schemes can represent one type of logical norm. So the opportunity seems to present itself to adopt the broad conception of logic and thereby unify the theory, seeing logic as including the study of the norms of implication relationships in general. On that view, the implications asserted in some arguments satisfy the norm of deductive validity and those in others satisfying the norms of argumentation schemes. However, no such move is made.

Whether Pragma-Dialectics takes ‘logic’ to mean formal deductive logic or just deductive logic (thus allowing for material deductions), taking logic to be restricted to some form of deductive logic is too narrow. The argument for this proposition is implicit in what has already been said. It was noted above that there are many patterns of argument instances of which are taken to offer sufficient grounds for accepting their conclusions without their being deductively

valid. Presumably such patterns of argument have their logics; that is, there are general norms for their adequacy. The implications alleged in the inferences they invite are subject to such norms. Presumably, also, the Pragma-Dialectical theory would want to accommodate such arguments, recognizing their justificatory or refutatory potential. It follows, then, that the Pragma-Dialectical theory needs to expand its conception of logic.

5. *Fourth proposition*

(4) The Pragma-Dialectical theory requires a clear and consistent approach to logic.

The Pragma-Dialectical theory defines 'argumentation' as:

"... a verbal, social and rational activity aimed at convincing a reasonable critic of the acceptability of a standpoint by putting forward a constellation of propositions justifying or refuting the proposition expressed in the standpoint." (STA, p. 1.)

From the perspective of considering the role of logic in the theory, the point that argumentation is supposed to be a *rational* activity, aimed at convincing a *reasonable* critic, is key. There are two ways the theory tries to satisfy the norms of rationality and reasonableness. One is by postulating an ideal model for argumentative discussions defined by rules expressly designed to optimize the possibility of resolving disagreements by means of arguing about them in a reasonable way. The procedure is thus (supposed to be) instrumentally rational, an effective means of reaching its goal. Within this procedure the participating parties are given the freedom, and responsibility, of agreeing to the methods they will use to resolve their disagreement, with the proviso that their methods must conform to the external constraint of being rational and reasonable. Their methods are thus (supposed to be) intrinsically rational, that is, will lead to agreement based on the merits of the arguments and will convince a reasonable critic.

In deciding together how they will proceed with their argumentation, the parties must agree on the discussion rules they will be bound by. These concern the starting points and the inference norms of the argumentation. As to the starting points, they must agree on how to identify the premises they may use or be committed to. Instrumental rationality requires that they do this in a systematic way, but there is no requirement of intrinsic rationality for the propositional contents of these commitments. The authors are convinced that such a requirement presupposes "justificationism," the (to their mind false) thesis that

there can be identified basic propositions that are reasonable or rational (see their discussion of the Münchhausen trilemma, e.g., *STA*, p. 131). As to the inference norms, however, the parties are not at liberty to choose any they like. They must conform to the requirements of logic insofar as they must be consistent and they must agree to some set of logical norms. The only choice they get is as to which logic to use. Logic is thus an “external” constraint that imposes intrinsic rationality on their argumentation.

The authors of the Pragma-Dialectical theory do not make much of this logical requirement, however it is arguably essential in order to block one charge of vicious relativism. The criticism has been levied by some (e.g., Biro & Siegel 2006a, 2006b; Siegel & Biro 2008; Lumer, 2009) that if the parties to an argumentative discussion could adopt any inference norms they might agree to in addition to any premises they might agree to, there would be nothing to prevent their settling their disagreements in an irrational way, even if they were mutually satisfied with the outcome. Defenders of the theory have denied this criticism (see Garseen & van Laar 2010), although the critics are not convinced by their response (see Siegel & Biro 2010). Whatever the upshot of that particular controversy, were the proponents of Pragma-Dialectics to emphasize what I think is at least an implicit requirement of the theory, namely that the interlocutors of a well-regulated episode of argumentation are obliged mutually to commit to *some* logic, then at least one basis for an allegation of vicious relativism would be removed. The only problem then would be the lack of clarity about the nature of the logic envisaged and the role of logic in the theory.

I find it difficult to diagnose this problem in detail in any single way. The authors seem to work with a narrow sense of ‘logic,’ in terms of which it denotes just deductive logic, or even just formal deductive logic. At the same time, they (in my opinion, correctly) allow argumentation schemes a role in identifying acceptable inferences. Thus deductive logic and argumentation schemes seem to be two unrelated kinds of norms for the implications alleged to underlie the inferences invited and committed to in arguments (see Pinto 2001, pp. 36-37, for the thesis that an argument is an invitation to draw an inference).

As already hinted, one coherent way of picturing things is to think of the inference commitments of arguments as being subject to assessment according to a variety of norms. Take ‘logic’ to be the name for the general study of, among other things, the norms that govern the implication relations that may be found,

in among other places, the inferences used in arguments. Thus the inferences of arguments may be assessed according to a variety of norms of logic. It is based on these norms that judgements are made about whether the acceptability of a premise may be transferred to the standpoint, whether the conclusion follows from the premises, whether one may infer (one is justified in inferring) the conclusion from the premises – the judgements can be characterized in various ways. One set of these norms consists of different theories of deductive logic. The inferences of arguments can be judged, accordingly, by whether the arguments are deductively valid according to the selected (or appropriate) deductive logic. Another set of these norms consists of the warrants embodied in (non-deductive) argumentation schemes. So understood, argumentation scheme warrants constitute another kind of logic. (How argumentation scheme warrants function in the assessment of argument inferences is a separate question.)

On this way of understanding logic in general, and deductive logic and argumentation scheme theory in particular, the question may be asked, what logical norms are *appropriately* applied to arguments in argumentation? The Pragma-Dialectical theory clearly envisages both deductive logic and argument scheme theory as providing legitimate norms for arguments, although it offers no rationale for that judgement. Moreover, it is silent on whether norms for inductive inferences (such as generalizations from samples to populations, or inductive analogies), or abductive inferences (the inferences of arguments to the best explanation), or conductive inferences (the inferences assimilating both positive and negative considerations)[v], or others, are also appropriate norms for the arguments of argumentation. If the Critical Discussion rules prohibit any norms not explicitly prescribed, all of these would be ruled out, and that would require a justification, given the ubiquity of these other kinds of inference. So the Pragma-Dialectical theory needs to develop an account of how deductive logic, argument scheme theory, and other kinds of logical norms, fit together (or don't). And it would need to motivate or justify that account.

An alternative conceptualization is to understand all patterns of argument – deductive, inductive, abductive, conductive, etc. – as argumentation schemes. Thus *modus ponens* would be an argumentation scheme no less than generalization from sample to population, appeal to expert opinion or argument from *a priori* analogy. Thinking of argument schemes as warrants or inference licenses, it would then be the case that some of them authorize inferences with

deductive closure while others authorize inferences to numerical probability judgements, yet others inferences to *pro tanto* ("all things considered") judgements, and so on.

In addition to sorting out its theory of the normative role of argument schemes, or as part of doing so, the Pragma-Dialectical theory needs to loosen its commitment to deductive logic. Its commitment to deductive logic forces on it a method for explicitizing unexpressed premises that cannot be sustained if the theory is to tolerate, as its authors seem to want it to, arguments employing non-deductive argument schemes that may presuppose unexpressed components. What is needed is a revision of the unexpressed premise explicitization procedure that does not (entirely) rely on even reconstructive deductivism.

If these tasks are carried out, along with an account of how argument schemes function to warrant inferences, then we will have a more coherent and complete account of the nature of logic and role it plays in Pragma-Dialectics. There is work to be done before that result can be declared accomplished.

Notes

[i] My thanks, for comments on an earlier draft that have removed errors and suggested constructive changes, to Hans Hansen, Rongdong Jin, Christopher Tindale, Douglas Walton, and especially Ralph Johnson. Thanks also to two anonymous reviewers for their corrections and constructive recommendations, which have resulted in several modifications and additions to the paper originally delivered at ISSA 2010.

[ii] I capitalize the first letters of 'Pragma-Dialectics' and 'Critical Discussion' in this paper where these are terms of art, the proper names of that theory and that theoretical construct propounded by F.H. van Eemeren, R. Grootendorst and their colleagues of the Amsterdam school.

[iii] In *Speech Acts in Argumentative Discussions* and *Argumentation, Communication and Fallacies*, the spelling "premiss" is used. In *A Systematic Theory of Argumentation*, the spelling "premise" is used. I will spell the word "premise" except when quoting a passage from either of the first two books in which the word appears.

[iv] Thanks to one of the referees for calling this fact to my attention.

[v] I here refer to what Carl Wellman (who introduced the term 'conductive argument') referred to as conductive arguments of the third pattern (see Wellman 1971, 52 and 57).

REFERENCES

- Biro, J., & Siegel, H. (2006a). Pragma-dialectic versus epistemic theories of arguing and arguments: Rivals or partners? In P. Houtlosser & A. van Rees (Eds.), *Considering pragma-dialectics: A festschrift for Frans H. van Eemeren on the occasion of his 60th birthday* (pp. 1-10). Mahwah, NJ: Lawrence Erlbaum.
- Biro, J., & Siegel, H. (2006b). In defense of the objective epistemic approach to argumentation. *Informal Logic* 26 (1), 91-101.
- Eemeren, F.H. van. (2010). *Strategic Maneuvering in Argumentative Discourse, Extending the Pragma-Dialectical Theory of Argumentation*. Amsterdam / Philadelphia: John Benjamins.
- Eemeren, F.H. van, & Grootendorst, R. (1984). *Speech Acts in Argumentative Discussions, Theoretical Model for the Analysis of Discussions Directed towards Solving Conflicts of Opinion*. Dordrecht-Holland/Cinnaminson-U.S.A.: Foris Publications.
- Eemeren, F.H. van, & Grootendorst, R. (1992). *Argumentation, Communication and Fallacies, A Pragma-Dialectical Perspective*. Hillsdale, NJ: Lawrence Erlbaum.
- Eemeren, F.H. van, & Grootendorst, R. (2004). *A Systematic theory of Argumentation, The Pragma-Dialectical Approach*. Cambridge: Cambridge University Press.
- Eemeren, F.H. van, & Houtlosser, P. (2009). Strategic maneuvering: Examining argumentation in context. In F.H. van Eemeren (Ed.), *Examining Argumentation in Context* (pp. 1-24). Amsterdam/Philadelphia: John Benjamins.
- Fogelin, R.J. (1978). *Understanding Argument: An Introduction to Informal Logic*. New York: Harcourt Brace Jovanovich.
- Garssen, B., & van Laar, J.A. (2010). A pragma-dialectical response to objectivist epistemic challenges. *Informal Logic* 30 (2), 122-141.
- Gerristen, S. (2001). Unexpressed premises. In F.H. van Eemeren (Ed.), *Crucial Concepts in Argumentation Theory* (pp. 51-79). Amsterdam: SicSat.
- Godden, D.M. (2005). Deductivism as an interpretive strategy: A reply to Groarke's recent defense of reconstructive deductivism. *Argumentation and Advocacy*, 41(3), 168-183
- Govier, T. (1985). *A Practical Study of Argument*. Belmont, CA: Wadsworth.
- Govier, T. (1987). *Problems in Argument Analysis and Evaluation*. Dordrecht: Foris / Berlin: Mouton de Gruyter.
- Groarke, L. (1992). In defense of deductivism: Replying to Govier. In F.H. van Eemeren, R. Grootendorst, J.A. Blair & C.W. Willard (Eds.), *Argumentation*

illuminated (pp. 113- 121). Amsterdam: SicSat.

Groarke, L. (1995). What pragma-dialectics can learn from deductivism and what deductivism can learn from pragma-dialectics. In F.H. van Eemeren, R. Grootendorst, J.A. Blair & C.W. Willard (Eds.), *Proceedings of the third ISSA conference on argumentation, Vol. 2, Analysis and evaluation* (pp. 1138-145). Amsterdam: SicSat.

Groarke, L. (1999). Deductivism within pragma-dialectics. *Argumentation*, 13(1), 1-16.

Groarke, L. (2002). Johnson on the metaphysics of argument. *Argumentation*, 16(3), 277-286.

Johnson, R.H., & Blair, J.A. (1977). *Logical Self-Defense*. Toronto: McGraw-Hill Ryerson.

Lumer, C. (2009). Pragma-dialectics and the function of argumentation. *Argumentation*, 24(1), 41-69.

Pinto, R.C. (2001). *Argument, Inference and Dialectic*. Dordrecht: Kluwer.

Scriven, M. (1977). *Reasoning*. New York: McGraw-Hill.

Siegel, H., & Biro, J. (2008). Rationality, reasonableness, and critical rationalism: Problems with the pragma-dialectical view. *Argumentation*, 22(3), 191-203.

Siegel, H., & Biro, J. (2010). The pragma-dialectician's dilemma: Reply to Garssen and van Laar. *Informal Logic*, 30 (4).

Wellman, C. (1971). *Challenge and Response, Justification in Ethics*. Carbondale and Edwardsville: Southern Illinois University Press.

ISSA Proceedings 2010 - Pragmatic Logic: The Study Of Argumentation In The Lvov- Warsaw School

1. The main question

Logical studies in Poland are mainly associated with the Lvov-Warsaw School (LWS), labeled also the *Polish school* in analytical philosophy (Lapointe, Woleński, Marion & Miskiewicz 2009; Jadacki 2009).**[i]** The LWS was established by Kazimierz Twardowski at the end of the 19th century in Lvov (Woleński 1989, Ch. 1, part 2). Its main achievements include developments of mathematical logic (see Kneale & Kneale 1962; McCall 1967; Coniglione, Poli & Woleński 1993) that became world-wide famous thanks to such thinkers as Jan Łukasiewicz, Stanisław Leśniewski, Alfred Tarski, Bolesław Sobociński, Andrzej Mostowski, Adolf Lindenbaum, Stanisław Jaśkowski and many others (see e.g. Woleński 1995, p. 369-378).

In '*the golden age of Polish logic*', which lasted for two decades (1918-1939), 'formal logic became a kind of international visiting card of the School as early as in the 1930s – thanks to a great German thinker, Scholz' (Jadacki 2009, p. 91).**[ii]** Due to this fact, some views on the study of reasoning and argumentation in the LWS were associated exclusively with a formal-logical (deductivist) perspective, according to which a good argument is the one which is deductively valid. Having as a point of departure a famous controversy over the applicability of formal logic (or FDL – formal deductive logic – see Johnson & Blair 1987; Johnson 1996; Johnson 2009) in analyzing and evaluating everyday arguments, the LWS would be commonly associated with deductivism.**[iii]**

However, this formal-logical interpretation of the studies of reasoning and argumentation carried on in the LWS does not do full justice to its subject-matter, research goals and methods of inquiry. There are two reasons supporting this claim:

- (1) Although logic became the most important research field in the LWS, its representatives were active in all subdisciplines of philosophy (Woleński 2009). The broad interest in philosophy constitutes one of the reasons for searching applications of logic in formulating and solving philosophical problems.
- (2) Some of the representatives of the LWS developed a pragmatic approach to reasoning and argumentation. Concurrently with the developments in formal logic, research was carried out which – although much less known – turns out to be particularly inspiring for the study of argumentation: systematic investigation consisting in applying language and methods of logic in order to develop skills

which constitute 'logical culture'. Two basic skills that the logical culture focuses on are: describing the world in a precise language and correct reasoning. My paper concentrates on the second point.

The discipline which aimed at describing these skills and showing how to develop them was called "Pragmatic Logic"; this is also the English title of Kazimierz Ajdukiewicz's 1965 book *Logika pragmatyczna* (see Ajdukiewicz 1974). The program of pragmatic logic may be briefly characterized as applying general rules of scientific investigation in everyday communication. This inquiry focused on the question whether the tools of logic can be used to educate people to (1) think more clearly and consistently, (2) express their thoughts precisely and systematically, (3) make proper inferences and justify their claims (see Ajdukiewicz 1957, p. 3). It should be added that this pragmatic approach to logic was something more fundamental than just one of many ideas of the school: it constituted the *raison d'être* of the didactic program of the LWS. Thus, the pragmatic approach to reasoning and argumentation had a strong institutional dimension: teaching how to think logically was one of the main goals of the school. The joint effort of propagating the developments of logic and exposing the didactic power of logic as a tool of broadening the skills of thinking logically may be illustrated by the passage from the status of the Polish Logical Association, founded on the initiative of Jan Łukasiewicz and Alfred Tarski in April 22nd, 1936.**[iv]** The aim of the association was 'to practice and propagate logic and methodology of science, their history, didactics and applications' (see *The History of the Polish Society for Logic and Philosophy of Science*).

The inspiration for exposing this research field in the LWS comes from numerous publications on the origins of the informal logic movement and the pragma-dialectical theory of argumentation. In their writings informal logicians and pragma-dialecticians explained the phenomenon of revitalizing argumentation theory in the 1970s (e.g. Johnson & Blair 1980; Woods, Johnson, Gabbay & Ohlbach 2002; van Eemeren & Grootendorst 2004; Blair 2009; Johnson 2009; van Eemeren 2009). They indicated a pragmatic need to evaluate arguments in the context of everyday communication as one of the main causes of this phenomenon. Thus, at the beginning of the modern study of arguments in the early 1970s we observe the 'marriage of theory and practice' in the study of logic (Kahane 1971, p. vii; see Johnson 2009, p. 19). In the case of the LWS this 'marriage' was realized by treating formal and pragmatic logic as two

interrelated, and not competing, wings of inquiry:

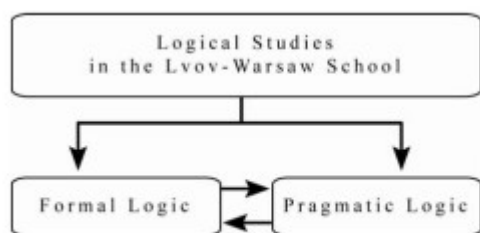


Figure 1: Two aspects of the logical studies in the LWS

From what has been said above, some similarities are noticeable between the approaches of the LWS and contemporary argumentation theory (including informal logic and pragma-dialectics). My paper aims at making those similarities more explicit, so I raise the question: what

relation obtains between logical studies carried on in the LWS and the recent study of argumentation? The answer is given in three steps. In section 2 I present some elements of the conceptual framework of the LWS, which are relevant for exploring connections between the school and argumentation theory. Among those elements there are concepts of: (a) logic, (b) logical fallacy, (c) argument, and (d) knowledge-gaining procedures. These concepts are helpful for introducing the conception of (e) logical culture. In section 3 I discuss some crucial elements of the program of pragmatic logic, which was aimed at elaborating a theoretical background for developing knowledge and skills of logical culture. Among those elements there are: (a) the subject-matter of pragmatic logic and (b) its main goals. Section 4 explores some perspectives for the rapprochement of pragmatic logic with argumentation theory. In the paper I refer to the works of the representatives of the LWS, as well as to the tradition of the school that is continued to this day.

2. The conceptual framework of the LWS

2.1. Logic

Due to its achievements in formal logic the LWS is usually associated with the view on logic as a formal theory of sentences (propositions) and relationships between them. This understanding of 'logic' (so-called 'narrow conception of logic') is dissociated from the 'broad conception of logic' that embraces also semiotics and methodology of science (see e.g. Ajdukiewicz 1974, p. 2-4). Both conceptions of logic are employed in the tradition of the LWS what is illustrated by the fact that in it 'logical skills' encompass not only formal-logical skills, but also skills which can be described as using tools elaborated in semiotics, e.g. universal tools for analyzing and evaluating utterances, and in the methodology of science, e.g. tools for developing and evaluating definitions, classifications, and questions occurring in scientific inquiry (see the Appendix A in Johnson 2009, p.

38-39). An interesting example of the broader account of logic can be found in Tarski (1995, p. xi). 'Logic' refers here to the discipline 'which analyses the meaning of the concepts common to all the sciences, and establishes the general laws governing the concepts'. So, if such a notion of logic is introduced, its obvious consequence relies on treating semiotics (a discipline dealing with concepts) and the methodology of science (the one dealing with principles of scientific inquiry) as fundamental parts of logic[v].

Other members of the LWS gave substantial reasons for treating the methodology of science as an element of logic in the broad sense. Jan Woleński makes this point explicit by focusing on the methodology of science as a discipline that uses tools of logic in exploring the structure of scientific theories:

The philosophy of science was a favourite field of the LWS. Since science is the most rational human activity, it was important to explain its rationality and unity. Since most philosophers of the LWS rejected naturalism in the humanities and social sciences, the way through the unity of language (as in the case of the Vienna Circle) was excluded. The answer was simple: science qua science is rational and is unified by its logical structure and by definite logical tools used in scientific justifications. Thus, the analysis of the inferential machinery of science is the most fundamental task of philosophers of science (Woleński 2009).

Treating the methodology of science as part of logic is not that obvious for other research traditions because of the fact that methodology of science is seen as associated with philosophy rather than with logic. The broad conception of logic employed by the LWS includes semiotics and the methodology of science within logic, not within philosophy (Przełęcki 1971), which is one of the reasons why this treatment of logic is unique. Another distinctive feature of the LWS is the analytical character of philosophical studies - the very reason for introducing the broad conception of logic. For semiotics and the methodology of science are treated in the LWS as disciplines developing universal tools used not only in scientific inquiry, but also in everyday argumentative discourse where analyzing meanings of terms (the skill of applying semiotics) and justifying claims (the skill of applying the methodology of science) are also of use.

2.2. Logical fallacy

One of the consequences of employing this conception of logic is the LWS understanding of logical fallacies as violations of norms of logic broadly understood. These norms of logic in a broad sense are: (1) rules for deductive

inference (formal logic), (2) rules for inductive inference (inductive logic), (3) rules for language use as elaborated in semiotics (syntax, semantics and pragmatics), and (4) methodological rules for the scientific inquiry. If these are the 'logical' norms, then consequently there are at least three general types of logical fallacies, i.e. (1) the fallacies of reasoning (also called the fallacies in the strict sense; see Kamiński 1962), (2) fallacies of language use ('semiotic fallacies'), and (3) fallacies of applying methodological rules governing such procedures as defining, questioning or classifying objects ('methodological fallacies').

There are some difficulties with such a broad conception of fallacy. Two major objections against it are:

- (a) This conception is too broad because it covers fallacies that are not violations of any logical norms strictly understood. For instance, it would be very hard to point to any logical norm, strictly understood, which would be violated in the case of improper measurement.
- (b) The types of fallacies discerned from the viewpoint of the broad conception of logic overlap. For example, the fallacy *post hoc ergo propter hoc* may be classified both as the fallacy of reasoning and as a methodological fallacy. The *fallacy of four terms* may be classified both as a fallacy of reasoning and a semiotic fallacy, because of the fact that it is caused by the ambiguity of terms, and the ambiguity is classified as a semiotic fallacy.

Despite these and other objections, this conception was useful at least in determining a general scope of logicians' interests in identifying fallacies. For example, *affirming the consequent* may be classified as a fallacy of reasoning, amphibology as a semiotic fallacy and vicious circle in defining as a methodological fallacy. This conception of fallacy was briefly presented to show that the conception of logical fallacy accepted by the majority of researchers of the LWS was much broader than that elaborated exclusively from the perspective of formal deductive logic.

2.3. Argument

Another element of the conceptual framework of the LWS is the concept of argument. Since most representatives of the LWS dealt basically with reasoning (e.g. elaborating very detailed classifications of reasoning), the conception of argument is related to the conception of reasoning. For instance, Witold Marciszewski (1991, p. 45) elaborates the definition of argument by associating it

with a kind of reasoning performed when the reasoner has an intention of influencing the audience:

A reasoning is said to be an *argument* if its author, when making use of logical laws and factual knowledge, also takes advantage of what he knows or presumes about his audience's possible reactions.

This definition is treated by Marciszewski as a point of departure for seeking theoretical foundations of argumentation not only in formal logic, but also in philosophy:

Therefore the foundations of the art of argument are to be sought not only in logic but also in some views concerning minds and mind-body relations including philosophical opinions in this matter.

These general remarks point to the need of analyzing argumentation not only from the formal-logical perspective, but also with bearing in mind the broader context of reasoning performed in any argumentative discourse. One of the ideas that may be used in analyzing arguments in a broader context is the conception of knowledge-gaining procedures. The procedures are treated in the LWS as components of argumentation.

2.4. Knowledge-gaining procedures

From the perspective of the broad conception of logic elaborated in the LWS, arguments may be studied by analyzing and evaluating the main knowledge-gaining procedures (or 'knowledge-creative procedures'; see Jadacki 2009, pp. 98-100) and their results. According to Jadacki (2009, p. 99), in the Polish analytical philosophy the following knowledge-gaining procedures were examined in detail:

- (1) Verbalizing, defining, and interpreting;
- (2) Observation (the procedure consisting of experience and measurement);
- (3) Inference:
 - (a) Deduction (proof and testing);
 - (b) Induction (statistic inference, 'historical' inference, inference by analogy, prognostics and explanation);
- (4) Formulating problems;
- (5) Partition, classification, ordering.

When we take *argumentation as a process*, it may be studied as a general procedure consisting of activities as those listed above. When one is dealing with

argumentation as a product, the results of these procedures are to be analyzed and evaluated. The major research interests in the LWS focused on the following results:

Ad. (1) Concepts and definitions (as the results of verbalizing, defining, and interpreting);

Ad. (2) Observational sentences;

Ad. (3) Arguments understood as constellations of premises and conclusions:

(a) Deductive inference schemes;

(b) Inductive inference schemes;

Ad. (4) Questions (as results of the procedure of formulating problems);

Ad. (5) Typologies and classifications (as results of the procedure of ordering).

As Jadacki emphasizes, the procedure which was carefully investigated in the LWS, was inference[**vi**]. So, one of the most interesting results of the knowledge-gaining procedures are arguments understood as constellations of premises and conclusions.

2.5. Logical culture

The conception of logical culture joins two components: (1) advances in the logical studies (i.e. research in logic) are claimed to be applicable in (2) teaching critical thinking skills. According to Tadeusz Czeżowski (2000, p. 68):

Logical culture, just as any social, artistic, literary or other culture, is a characteristic of someone who possesses logical knowledge and competence in logical thinking and expressing one's thoughts.

Thus, the term 'logical culture' refers both to the knowledge of logic (as applied in using language and reasoning) and to the skill of performing commonsense and scientific reasoning (Koszowy 2004, p. 126-128). Logic broadly understood elaborates tools helpful in sharpening the skills of the logical culture. The general areas of its application are illustrated by Figure 2:

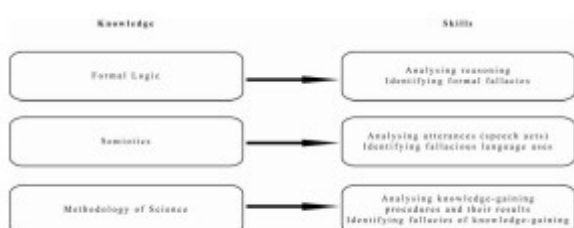


Figure 2: Knowledge and skills of logic (broadly understood)

We may here observe that some skills characteristic of the person who possesses

logical culture are also substantial for the two normative models in the study of argumentation: (a) an ideal of a critical thinker in the tradition of teaching informal logic in North America, (b) the ideal of a reasonable discussant in a pragma-dialectical theory of argumentation.

3. The program of pragmatic logic

The concept of logical culture as presented in the previous section is here a point of departure for introducing Ajdukiewicz's program of pragmatic logic. The term 'logical culture' denotes both knowledge of logic and skills of applying this knowledge in science and everyday conversations, whereas the term 'pragmatic logic' refers to a discipline aimed at describing these skills and showing how to develop them.

The program of pragmatic logic is based on the idea that general (logical and methodological) rules of scientific investigation should be applied in everyday communication. Pragmatic logic is a discipline aimed at applying logic (in a broad sense) in teaching and in everyday language use. So, two basic goals of pragmatic logic are: extending knowledge of logic and improving skills of applying it.

3.1. Subject-matter of pragmatic logic

Pragmatic logic consists of the analyses concerning:

- (1) Word use: (a) understanding of expressions and their meaning, (b) statements and their parts, (c) objective counterparts of expressions (extension and intension of terms), (d) ambiguity of expressions and defects of meaning (ambiguity, vagueness, incomplete formulations) and (e) definitions (e.g. the distinction between nominal and real definition, definitions by abstraction and inductive definitions, stipulating and reporting definitions, definitions by postulates and pseudo-definitions by postulates, errors in defining).
- (2) Questioning: (a) the structure of interrogative sentences, (b) decision questions and complementation questions, (c) assumptions of questions and suggestive questions, (d) improper answers, (e) thoughts expressed by an interrogative sentence and (f) didactic questions.
- (3) Reasoning and inference: (a) formal logic and the consequence relation (logical consequence, the relationship between the truth of the reason and the truth of the consequence, enthymematic consequence), (b) inference and conditions of its correctness, (c) subjectively certain inference (the conclusiveness

of subjectively certain inference in the light of the knowledge of the person involved), (d) subjectively uncertain inference (the conclusiveness of subjectively uncertain inference, logical probability versus mathematical probability, statistical probability, reductive inference, induction by enumeration, inference by analogy, induction by elimination).

(4) Methodological types of sciences: (a) deductive sciences, (b) inductive sciences, (c) inductive sciences and scientific laws, (d) statistical reasoning.

Since inference is one of the key topics of inquiry, in order to show that the program of pragmatic logic has a similar subject-matter to the contemporary study of argumentation, I shall discuss, as an example, Ajdukiewicz's account of the 'subjectively uncertain inference'.

According to Ajdukiewicz (1974, p. 120), a subjectively uncertain inference is the one in which we accept the conclusion with lesser certainty than the premises. It results from the fact that in spite of the premises being true the conclusion may turn out to be false. The instances of this type of inference are such that the strength of categorically accepted premises leads to a non-categorical acceptance of the conclusion. This is illustrated by the following example:

The fact that in the past water would always come out when the tap is turned on, makes valid – we think – an almost, though not quite, certain expectation that this time, too, water would come out when the tap is turned on. But our previous experience would not make full certainty valid (p. 120).

If we are to be entitled to accept the conclusion with less than full certainty, it suffices if the connection between them is weaker than the relation of consequence is. Ajdukiewicz deals with this kind of reasoning in terms of the probability of conclusion:

Such a weaker connection is described by the statement that the premisses make the conclusion probable. It is said that a statement *B* makes a statement *A* probable in a degree *p* in the sense that the validity of a fully certain acceptance of *B* makes the acceptance of *A* valid if and only if the degree of certainty with which *A* is accepted does not exceed *p* (pp. 120-121).

So, 'a statement *B* makes a statement *A* probable in a degree *p*, if the logical probability of *A* relative to *B* is *p*':

$P_1(A/B) = p$.

Furthermore, Ajdukiewicz distinguishes the psychological probability of a statement (i.e. the degree of certainty with which we actually accept that statement) from the logical probability of a statement (that degree of certainty with which we are entitled to accept it). The logical probability is related to the amount of information one possesses at a given stage, because 'the degree of certainty with which we are entitled to accept the statement depends on the information we have'. This claim is in accord with the 'context-dependent' treatment of arguments: argument analysis and evaluation done both in informal logic and in pragma-dialectics depends on the context in which arguments occur. Ajdukiewicz is aware of the fact that evaluating the logical probability of a given statement (P) depends on the actual knowledge of the subject who believes P . The following example confirms this interpretation:

If we know about the playing card which is lying on the table with its back up merely that it is one of the cards which make the pack used in auction bridge, then we are entitled to expect with less certainty that the said card is the ace of spades than if we knew that it is one of the black cards in that pack (p. 121).

This example gives Ajdukiewicz reasons not to speak about the logical probability of a statement 'pure and simple', but exclusively about the logical probability of that statement relative to a certain amount of information. Ajdukiewicz points to the fact that this relation between the logical probability and the amount of information we possess in a given context is clearly manifested in the following definition of logical probability:

The logical probability of the statement A relative to a statement B is the highest degree of the certainty of acceptance of the statement A to which we are entitled by a fully certain and valid acceptance of the statement B (ibid.).

This definition is helpful in giving the answer to the question: when is an uncertain inference conclusive in the light of the body of knowledge K ? Ajdukiewicz's answer is given in terms of the degree of certainty of the acceptance of the conclusion:

Such inference is conclusive in the light of K if the degree of certainty with which the conclusion is accepted on the strength of a fully certain acceptance of the premises does not exceed the logical probability of the conclusion relative to the premises and the body of knowledge K (ibid.).

This piece of Ajdukiewicz's account of the subjectively uncertain inference shows that pragmatic logic deals with defeasible reasoning by looking for objective (here

'logical') criteria of evaluating defeasible reasoning. It clearly shows the tendency in pragmatic logic to analyze and evaluate not only deductively valid arguments, but also defeasible ones, as it is done in the contemporary theory of argumentation[vii].

3.2. *The goal of pragmatic logic*

The goal of pragmatic logic may be extracted from Ajdukiewicz's view on logic treated as a foundation of teaching. This part of Ajdukiewicz's analyses shows how important pedagogical concerns are for the program of pragmatic logic. It also explains why logic is called 'pragmatic'.

For Ajdukiewicz 'the task of the school is not only to convey to the pupils information in various fields, but also to develop in them the ability of correctly carrying out cognitive operations' (Ajdukiewicz 1974, p. 1). This excerpt clearly explains why analysis and evaluation of knowledge-gaining procedures and their results is the main goal of pragmatic logic. If teaching students how to reasonably carry out major cognitive procedures (aimed at achieving knowledge) is one of the main purposes of teaching, then pragmatic logic, understood as a discipline aimed at realizing this goal, has as its theoretical foundation the description of the basic principles of knowledge-gaining procedures.

Ajdukiewicz's crucial thesis is that logic consisting of formal logic, semiotics and the methodology of science constitutes one of the indispensable foundations of teaching. Logical semiotics (the logic of language) 'prepares the set of concepts and the terminology which are indispensable for informing about all kinds of infringements, and indicates the ways of preventing them' (Ajdukiewicz 1974, p. 3). The methodology of science provides 'the knowledge of terminology and precise methodological concepts, and also the knowledge of elementary methodological theorems, which lay down the conditions of correctness of the principal types of cognitive operations, must be included in the logical foundations of teaching' (p. 3). Ajdukiewicz gives an example of a science teacher, who informs students about the law of gravitation and its substantiation by explaining how Newton arrived at the formulation of the law:

When doing so he will perhaps begin by telling pupils that the said law was born in Newton's mind as a *hypothesis*, from which he succeeded to *deduce* the law which states how the Moon revolves round the Earth and how the planets revolve round the Sun, the law which agrees with observations with the *margin of error*. That agreement between the *consequences* of the said hypothesis with empirical

data is its *confirmation*, which Newton thought to be sufficient to accept that hypothesis as a *general law* (p. 2).

Thus, according to Ajdukiewicz, the role of the methodology of science in the foundations of teaching is revealed by the fact that crucial terms such as 'hypothesis', 'deduction' or 'verification of hypothesis' are in fact methodological and this is why they are useful in the process of achieving knowledge.

However, pragmatic logic is to be applied not only to scientific research or at school, but also to everyday speech communication. As Ajdukiewicz clearly states, pragmatic logic is not the opposite of formal logic, but both formal and pragmatic logic complement each other. Moreover, pragmatic logic is much more useful for the teacher, who aims – among other things – at training students to make statements that are relevant, unambiguous and precise, which is 'one of the principal tasks of school education' (Ajdukiewicz 1974, p. 3).

4. Pragmatic logic and argumentation theory: towards bridging the gap

The overview of the concepts of logic, logical fallacy, argumentation, logical culture, pragmatic logic, subjectively uncertain inference and the logical foundations of teaching gives support for the claim that in the LWS and in argumentation theory there are similar tendencies of crucial importance. One of the issues is that the two disciplines share in fact the same subject-matter. To show this in detail, however, would require further inquiry.

Future research should also answer the question of how the main ideas of pragmatic logic may be of use in the analysis, evaluation and presentation of natural language arguments. Research on such applicability of pragmatic logic may focus on the analysis of those components of the program of pragmatic logic which also constitute the subject-matter of argumentation theory. Some similarities may be treated as a point of departure for further systematic exploration of the connection between pragmatic logic and argumentation theory. Figure 3 sketches future lines of inquiry by showing the relation between three research topics in pragmatic logic and in argumentation theory:

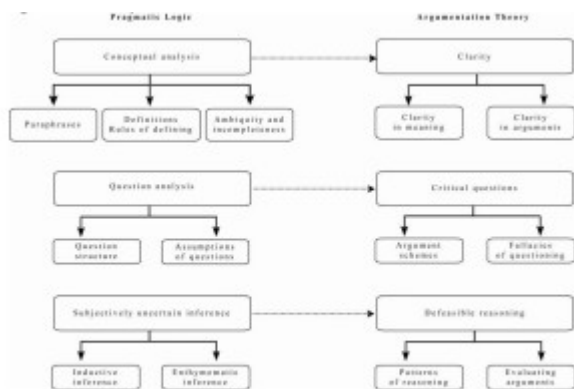


Figure 3: Some connections between pragmatic logic and argumentation theory

Moreover, some fundamental assumptions of pragmatic logic harmonize with methodological foundations (i.e. the subject-matter, goals and methods) of informal logic and pragma-dialectics. The main assumptions of this kind are: (1) the normative concern for reasoning and argumentation and (2) the claim that the power of the study of reasoning and argumentation manifests itself in improving critical thinking skills.

As it was shown above, the representatives of the LWS were fully aware of the pragmatic need of studying everyday reasoning. And the ideas of Ajdukiewicz were aimed to be systematically applied to teaching and educational processes. The title given by Ajdukiewicz to one of his papers (Ajdukiewicz 1965: *What can school do to improve the logical culture of students?*) clearly illustrates this approach to teaching logic. In order to stress the pragmatic dimension of this project, it should be mentioned that Ajdukiewicz together with other thinkers of the LWS applied the program in their work as academic teachers. In the *Preface* of his *Introduction to Logic and to the Methodology of Deductive Sciences* (1995) Tarski states:

I shall be very happy if this book contributes to the wider diffusion of logical knowledge. These favorable conditions can, of course, be easily overbalanced by other and more powerful factors. It is obvious that the future of logic as well as of all theoretical science, depends essentially upon normalizing the political and social relations of mankind, and thus upon a factor which is beyond the control of professional scholars. I have no illusions that the development of logical thought, in particular, will have a very essential effect upon the process of the normalization of human relationships; but I do believe that the wider diffusion of the knowledge of logic may contribute positively to the acceleration of this process. For, on the one hand, by making the meaning of concepts precise and uniform in its own field, and by stressing the necessity of such a precision and

uniformization in any other domain, logic leads to the possibility of better understanding between those who have the will to do so. And, on the other hand, by perfecting and sharpening the tools of thought, it makes man more critical – and thus makes less likely their being misled by all the pseudo-reasonings to which they are in various parts of the world incessantly exposed today (Tarski 1995, p. xiii).

The program of pragmatic logic shows that the idea of the necessity of choosing formal and informal analyses of arguments is a false dilemma. For instead of competing with each other, formal logic and pragmatic logic are both legitimate instruments of research and teaching[viii].

NOTES

[i] LWS is characterized as an analytical school which was similar, to some extent, to the Vienna Circle (Woleński 1989; Woleński 2009) It should be noted, however, that Polish analytical philosophy is a broader enterprise than the LWS, since there were prominent analytic philosophers, such as Leon Chwistek or Roman Ingarden, who did not belong to the school (Jadacki 2009, p. 7). However, the analytic approach to language and methods of science constituted the key feature of the research carried on in the school.

[ii] Heinrich Scholz, who is claimed to be the first modern historian of logic (Woleński 1995, p. 363) called Warsaw one of the capitals of mathematical logic (Scholz 1930).

[iii] Deductivism is the view concerning the criteria which allow us to distinguish good and bad reasoning. The main thesis of deductivism states that good reasoning in logic is minimally a matter of deductively valid inference (Jacquette 2009, p. 189). The logical tradition of the LWS accepts deductivism, however it deals not only with reasoning, but also with broader ‘logical’ norms of defining, questioning or ordering. For the detailed characteristic of deductivism in formal and informal logic see Jacquette 2007, Jacquette 2009 and Marciszewski 2009.

[iv] The first President of the Association was Jan Łukasiewicz. The other members of the first Executive Board were *Adolf Lindenbaum*, *Andrzej Mostowski*, *Bolesław Sobociński* and *Alfred Tarski*. The constitution of the Association was adopted in 1938 (see *The history of the Polish Society for Logic and Philosophy of Science*).

[v] I do not claim, however, that the broad conception of logic, as accepted in the LWS, is unique. Examples of such a broad understanding of the term ‘logic’ may

be found in the works of Antoine Arnauld and Pierre Nicole (*Port Royal Logic*), John Stuart Mill (*The System of Logic. Ratiocinative and Inductive*) and Charles Sanders Peirce (*Collected Papers*) (see the Appendix A in Johnson 2009, p. 39).

[vi] This is why classifying various types of inference was one of the crucial tasks for the representatives of the LWS (see Woleński 1989).

[vii] In the paper I do not discuss whether defeasible inference is a separate type of inference, as distinct from inductive inference. For the brief overview of the literature on this topic see e.g. Johnson 2009, p. 32.

[viii] I am grateful to Prof. Ralph H. Johnson for discussion which was inspiring for raising the main question of this paper. I thank Prof. Agnieszka Lekka-Kowalik for her helpful comments.

REFERENCES

Ajdukiewicz, K. (1957). *Zarys Logiki (An Outline of Logic)*. Warsaw: PZWS – Państwowe Zakłady Wydawnictw Szkolnych.

Ajdukiewicz, K. (1965). Co może szkoła zrobić dla podniesienia kultury logicznej uczniów? (What school can do to improve the logical culture of students?). In K. Ajdukiewicz, *Język i poznanie*, t. II (*Language and Cognition*, vol. II) (pp.322-331), Warsaw: PWN – Polish Scientific Publishers.

Ajdukiewicz, K. (1974). *Pragmatic Logic*. (O. Wojtasiewicz, Trans.). Dordrecht/Boston/Warsaw: D. Reidel Publishing Company & PWN – Polish Scientific Publishers. (Original work published 1965). [English translation of *Logika pragmatyczna*].

Blair, J.A. (2009). Informal logic and logic. *Studies in Logic, Grammar and Rhetoric*, 16 (29), 47-67.

Coniglione, F., Poli, R. & Woleński, J., (Eds.) (1993), *Polish Scientific Philosophy. The Lvov-Warsaw School*, Amsterdam: Rodopi.

Czeżowski, T. (2000). On logical culture. In T. Czeżowski, *Knowledge, Science, and Values. A Program for Scientific Philosophy* (pp. 68-75), Amsterdam/Atlanta: Rodopi.

Eemeren, F.H. van (2009). Strategic manoeuvring between rhetorical effectiveness and dialectical reasonableness. *Studies in Logic, Grammar and Rhetoric*, 16 (29), 69-91.

Eemeren, F.H. van & Grootendorst, R. (2004), *A Systematic Theory of Argumentation: The Pragma-Dialectical Approach*, Cambridge: Cambridge University Press.

Jacquette, D. (2007). Deductivism and the informal fallacies. *Argumentation*, 21,

335-347.

- Jacquette, D. (2009). Deductivism in formal and informal logic. *Studies in Logic, Grammar and Rhetoric*, 16 (29), 189-216.
- Jadacki, J. (2009). *Polish Analytical Philosophy. Studies on Its Heritage*, Warsaw: Wydawnictwo Naukowe Semper.
- Johnson, R. H. (1996). *The Rise of Informal Logic*. Newport News: Vale Press.
- Johnson, R. H. (2009). Some reflections on the Informal Logic Initiative, *Studies in Logic, Grammar and Rhetoric*, 16 (29), 17-46.
- Johnson, R. H. & Blair, J. A. (1980). The recent development of informal logic. In J. A. Blair & R. H. Johnson (Eds.), *Informal Logic, The First International Symposium* (pp. 3-28), Inverness, CA: Edgepress.
- Johnson, R. H. & Blair, J. A. (1987). The current state of Informal Logic. *Informal Logic*, 9, 147-151.
- Kahane, H. (1971). *Logic and Contemporary Rhetoric*. Belmont: Wadsworth.
- Kamiński, S. (1962). Systematyzacja typowych błędów logicznych (Classification of the typical logical fallacies), *Roczniki Filozoficzne*, 10, 5-39.
- Kneale, W. & Kneale, M. (1962). *The Development of Logic*, Oxford: The Clarendon Press.
- Koszowy, M. (2004). Methodological ideas of the Lvov-Warsaw School as a possible foundation for a fallacy theory. In T. Suzuki, Y. Yano & T. Kato (Eds.), *Proceedings of the 2nd Tokyo Conference on Argumentation* (pp. 125-130), Tokyo: Japan Debate Association.
- Koszowy, M. (2007). A methodological approach to argument evaluation. In F. H. van Eemeren, J. A. Blair, C. A. Willard & B. Garssen (Eds.), *Proceedings of the Sixth Conference of the International Society for the Study of Argumentation* (pp. 803-807), Amsterdam: Sic Sat – International Center for the Study of Argumentation.
- Lapointe, S., Woleński, J., Marion, M. & Miskiewicz, W. (Eds.) (2009). *The Golden Age of Polish Philosophy. Kazimierz Twardowski's Philosophical Legacy*. Dordrecht/Heidelberg/London/New York: Springer.
- Marciszewski, W. (1991). Foundations of the art of argument. *Logic Group Bulletin*, 1, Warsaw Scientific Society, 45-49.
- Marciszewski, W. (2009). On the power and glory of deductivism. *Studies in Logic, Grammar and Rhetoric*, 16 (29), 353-355.
- McCall, S. (1967). *Polish Logic, 1920-1939*. Oxford: Clarendon Press.
- Przełęcki, M. (1971). O twórczości Janiny Kotarbińskiej (On Janina Kotarbińska's

Output). *Przegląd Filozoficzny*, 5 (72).

Scholz, H. (1930). *Abriss der Geschichte der Logik*. Berlin: Junker and Dünhaupt.

Tarski, A. (1995). *Introduction to Logic and to the Methodology of Deductive Sciences*. New York: Dover Publications.

The history of the Polish Society for Logic and Philosophy of Science. Retrieved December 17, 2009, from <http://www.logic.org.pl>

Woleński, J. (1989). *Logic and Philosophy in the Lvov-Warsaw School*, Dordrecht/Boston/Lancaster: D. Reidel Publishing Company.

Woleński J. (1995). Mathematical logic in Poland 1900-1939: people, circles, institutions, ideas, *Modern Logic*, 5, 363-405.

Woleński, J. (2009). Lvov-Warsaw School. In *Stanford Encyclopedia of Philosophy*. Retrieved June 20, 2010, from <http://plato.stanford.edu/entries/lvov-warsaw/>

Woods, J., Johnson, R.H., Gabbay, D.M. & Ohlbach, H.-J. (2002). Logic and the Practical Turn. In D. M. Gabbay, R. H. Johnson, H.-J. Ohlbach & J. Woods (Eds.), *Handbook of the Logic of Argument and Inference* (pp. 1-39). Amsterdam: North-Holland.

ISSA Proceedings 2006 - Conceptualizing And Evaluating Dissociation From An Informal Logical Perspective



1. Introduction

Dissociation is one of the two major schemes of argumentation proposed by Chaim Perelman and Lucie Olbrechts-Tyteca. While association has already been scrutinized through analysis of such aspects as causal and analogical arguments, in-depth investigation into the nature of dissociation has been limited to work done by M. A. van Rees and this

author. This article examines issues in conceptualizing and evaluating dissociation. More specifically, it proposes that Trudy Govier's notion of "logical core" helps to both elucidate the conception of, and evaluate the adequacy of conceptual differentiation in regards to dissociation. Building on this foundation, this paper will attempt to address several issues surrounding dissociation. Section 2 of this article briefly outlines the notion of dissociation. Section 3 clarifies the concept of the "logical core" and theorizes that it helps to evaluate dissociation. Section 4 presents and responds to various implications. Section 5 offers conclusions and recommendations for further research.

2. Dissociation reconceptualized

Chaim Perelman and Lucie Olbrechts-Tyteca have started an investigation into dissociation as one of the two major argumentation schemes, the other being association. In association, an arguer assembles what are thought to be different entities into a single entity; examples include causal arguments, analogical arguments, and arguments from authority. Dissociation, on the other hand, is a type of argumentation scheme in which an arguer disassembles what was originally thought to be a single entity into two different entities by introducing criteria for differentiation (1969, p. 190). These criteria are normative as well as conceptual; as such, they establish a hierarchy between the dissociated entities, placing one above the other. Using dissociation, the arguer attempts to create a new world vision by establishing a conceptual demarcation in what is believed to be a single entity. If the audience is persuaded to accept the vision offered through this dissociation, a new reality is established. Based upon Perelman and Olbrechts-Tyteca and van Rees (2005), this author conceptualizes dissociation as a scheme of argument as follows:

(1)

1. X is accepted as a single entity.
2. X, assumed to be a single entity, is actually subdivided into two value-laden entities.
 - 2.1 X is divided into two entities (X/XII and XI), based on criteria for differentiation.
 - 2.2 The subdivided X (X/XII and XI) is placed in a hierarchy according to the value embedded in the criteria for differentiation.
3. Although X is believed to be a unified entity, it can be divided into X/XII and XI, with one being more important than the other (from 1, 2)[i].

Critical questions usually accompany an argumentation scheme. The fact that the following critical questions arise from the concept of dissociation is a strong sign that dissociation is not merely a technique used in argumentation, but a product of the practice of argumentation.

(2)

1. Is the original X generally accepted as a single entity?
2. Is the conceptual distinction between the two subdivided entities clear? In other words, do the criteria for differentiation form a conceptual distinction?
3. Is the value hierarchy which is set up among the subdivided entities tenable?
4. According to the value hierarchy, is one subcomponent more important than the other?

The above scheme and critical questions give rise to three discussion points. Firstly, both the conception of dissociation and the critical questions refute the line of reasoning which claims that dissociation is not an argumentation scheme. Bart Garssen, as quoted by Rob Grootendorst (1999, p. 288), states that dissociation is neither a scheme of argument nor a specific type of argumentation, since acceptance of the premise does not increase adherence to a conclusion, but rather ends in its denial[**ii**]. Since his position denies that dissociation is a scheme of argumentation, it requires some consideration.

One premise of dissociation, however, is that X is accepted as a unified entity, as offered in (1)-1 above. Additionally, the conclusion of dissociation is that although X is believed to be a unified entity, it can be divided into the less important XI and the more important X/XII, as seen in (1)-3. With an *although* clause in the conclusion of a dissociation, the acceptance of the above premise (1)-1 helps the audience adhere to that conclusion. A conclusion with an *although* clause, as shown in (1)-3, requires the acceptance of X as a single entity in its premise. Without an *although* clause, however, the acceptance of X as a single entity is irrelevant to the conclusion, since its acceptance does not promote adherence to the conclusion, as Garssen rightly claims. As a result, the *although* clause is without support, and the dissociation will be logically weak. This reconceptualization of dissociation denies Garssens's position that dissociation is not a scheme of argumentation, and thus the presumption strongly favors the notion that dissociation is a scheme of argumentation. In light of this reconceptualization, scholars taking the position that dissociation is merely a technique of argumentation must first conceptualize 'technique' and advance a

different line of support for why dissociation is a technique of argumentation. Secondly, dissociation, like causal reasoning and analogy, can serve as a type of reasoning for use in argument. In other words, an arguer can offer a value-laden, conceptual distinction without actually making an argument. Ralph H. Johnson (2003), for example, questioned whether my previous article had wrongly regarded Johnson and Blair's article (1980/1996) as an extended argument, without criticizing my main claim that they had used dissociation to differentiate informal logic from formal deductive logic and standard inductive logic. If Johnson is correct and I was examining dissociative reasoning rather than dissociative arguments, my article may have unfairly evaluated the dissociation they offered. The lesson to be learned is that the type of discourse must be determined before the dissociation can be evaluated appropriately. This is because if we treat non-argumentative discourse as argument, we will probably fail to evaluate the discourse fairly.

Finally, although dissociation is presented here as a scheme of argument or reasoning for subdividing a single entity into two, this does not exclude the possibility of dividing it into three or more. We can conceptually classify the world, for example, into 'apparent', 'real', and 'surreal' worlds; if we succeed in this attempt, then the dissociation has, in fact, functioned to subdivide a single entity into three[**iii**]. Although these are key issues meriting further investigation, this article does not directly inquire into them, being limited to conceptual differentiation in dissociation.

3. Logical core and dissociation

3.1 Logical core in a priori analogy

Having laid out how dissociation can be schematized, let us turn our attention to a key notion: logical core, as advanced by Trudy Govier (1987) in her examination of *a priori* (logical) analogy. In this type of analogy, an arguer offers two cases sharing fundamental similarities in the premise. The arguer then attempts to conclude that because of these fundamental similarities (which constitute the "logical core"), the two cases can be regarded as equal, or should be treated in the same way. Govier states that:

In its natural use, the technique of logical analogy makes this logical core apparent by repetition, rather than articulation. The logical essentials of argument are repeated in the parallel argument and we 'see' them as we see sameness of shape in a blue circle and a red circle. The common structure can be seen as such without being represented as a separate item. This common

structure is the core of the argument; it is that part of the argument which must be preserved in the logical analogue, that which is essential to the way the premises and conclusion are supposed to connect in the original argument. When we represent this core, substituting letters for variable elements in the argument, we have what might be called a primitive formalization of the argument. (p. 213)

Although the two cases being compared are not exactly the same, their differences are insignificant, because the cases share a logical core. Emphasizing important common features, *a priori* analogy attempts to associate these two different cases and disregard their differences. In her *Practical Study of Argument*, Govier schematizes *a priori* analogy as follows:

(3)

1. The analogue has features *a*, *b*, and *c*.
2. The primary subject has features *a*, *b*, and *c*.
3. It is by virtue of features *a*, *b*, and *c* that the analogue is properly classified as a *W*.
4. The primary subject ought to be classified as a *W*. (Govier 2001, p. 358)

In this scheme, the two cases (the primary subject and the analogue) have a common structure; both have features *a*, *b*, and *c*. These two cases, therefore, share a logical core. Although they may differ in some respects, their shared logical core negates actual and potential dissimilarities, giving us license to treat the two in the same way.

It is important to note that Govier does not subscribe to the belief that logical core is a form of argument. The logical core shared by two cases is not comprised of such standard logical terms as 'and', 'or', 'all', 'no', 'some', or 'if... then', but of seemingly non-logical terms, for example: "'survives in', 'acceptable for', 'temperamentally mismatched', 'has not definitive method of proof', and so on" (Govier 1987, p.213). If the two cases feature a common core quality, the arguer can conclude that the two are fundamentally the same. This situation suggests that a logical core cannot easily be put into logical form, but is embedded in language as it is naturally generated. By extension, examination of the logical core requires an awareness of the subtleties inherent in natural language.

3.2 Dissociation and logical core

As described in section 2, dissociation establishes a conceptual subdivision in what is otherwise regarded as a single entity. In the process of conceptual distinction, a dissociation must make a clear distinction, as stated in critical

question (2)-2: Is the conceptual distinction between the two subdivided entities clear? In other words, do the criteria for differentiation actually make a conceptual distinction?

The notion of logical core plays a crucial role in examining this conceptual distinction. The previous section has shown that the logical core in an a priori analogy helps us detect key similarities between two entities. If entities share a logical core, then they are analogous to each other; an arguer can then conclude that the entities can be regarded as being the same. In contrast, logical core plays the opposite role in dissociation. If two subdivided entities (X/XII and XI) do not share a logical core, then they are *dissimilar*, and an arguer can set up a conceptually clear distinction, regardless of other features common to both entities. While XI, one subdivided component in a dissociation, does not have feature a, X/XII, the other component does. The fact that XI and X/XII do not share a logical core (feature a) gives us license to conclude that they are classified differently. Since logical core must, by definition, be preserved to demonstrate critical similarities, two things not sharing a logical core are fundamentally different. In other words, logical core in a priori analogy demonstrates critical similarities; logical core in dissociation, on the other hand, demonstrates critical dissimilarity.

Since logical core plays opposite functions in a priori analogy and dissociation, the functions of a priori analogy and dissociation are contrastive; the former emphasizes critical similarities between two entities, while the latter emphasizes their critical *dissimilarities*. Additionally, the former advances a claim that two different cases are actually a single case, whereas the latter claims that a single entity is actually two different ones.

Having seen the function which logical core plays in establishing dissociation, let us look at the second component in dissociation. This is to advance a conceptual differentiation, conceptualized as: "X is divided into two entities, based on criteria for differentiation." In this component, logical core functions as the criterion for differentiation; XI does not have feature a, whereas X/XII does. Note that XI and X/XII likely share some common features, given that they originate from the same entity. These common features, however, do not play significant roles once the logical core clarifies the critical dissimilarity. Thus, logical core sheds light on the conceptual differentiation in dissociation, and the second component can be reformulated as:

(4)

2. X, assumed to be a single entity, is actually subdivided into two value-laden entities.

2.1 X is divided into two entities (X/XII and XI), with XI not having the logical core (feature a) and X/XII having it.

With this reconceptualization in mind, let us examine actual cases of dissociation selected from among the many which appear in scholarly disputes about conceptualization. All are taken from the proceedings of *Informal Logic: The First International Symposium***[iv]**, and are in the form of extended discourse. Some pairs of examples, taken from the same article, advance a single point. The first is from John Woods' proceedings article:

(5)

I have been assuming throughout that the principal content of what is so often called "informal logic" is the fallacies...; and of course a theory of argument that is sensitive to all this complexity. If this has been a tolerable assumption, then I have an answer to the question with which we began, "What is Informal Logic?" *Nothing is*. The theory of the fallacies is not logic, though it includes some logic, indeed quite a bit of logic; and the theory of the fallacies is not only at its best as a formal theory, it is difficult to see how the suppression of its formal character could leave a residue fully deserving the name of theory.

Now, this is not to deny that, on a quite different interpretation of "informal," there do exist perfectly legitimate and familiar instances of informal "logic." An analogy with mathematics might serve the point at hand Mathematics that is done in the usual, workaday way, that is to say, in ordinary mathematical English and prior to any axiomatic treatment, is said to be informal mathematics. There is not reason to deny to fallacy-theory this same kind of informality. In both kinds of case, informality is a pre-axiomatic affair, and I have been at some pains to persuade the reader that the construction of logistic systems is not by any means the only, or best, way to employ formal methods. (Woods, pp. 62-63)

Here Woods states that the main content of what is often called informal logic is "the fallacies." He asks the readers to accept this view as the starting point of his dissociation for the sake of argument, qualifying it with, "if this has been a tolerable assumption." He then attempts to deny the existence of informal logic in this sense, asserting that fallacy-theory is not logic. In the second paragraph, he introduces a new conception of informal logic: workaday logic, prior to any axiomatic treatment. While denying informal logic in the first sense, Woods

accepts informal logic in the second sense. He is ascribing two different logical cores to the single term 'informal logic': fallacy-theory and workaday logic. If these two have no bearing upon each other, then we can conclude that because the two senses of informal logic are different, the conceptual differentiation offered by Woods is clear.

The second example comes from Michael Scriven's article, "The Philosophical and Pragmatic Significance of Informal Logic."

(6)

To begin with, the emergence of informal logic marks the end of the reign of formal logic. Not by any means the end of the *subject*, just its relegation to its proper place in the academic zoo, somewhere over there just north of mathematics and west of computer science, and far away from the children's part of the zoo. It's not good for children to see too much of the monsters there; it warps their little minds, gives them dread diseases like Meinong's syndrome and quinea and the kripkes. They grow up into poor little perverts who – in the case of Tarski psychosis – mutter things like "'*p* is true' if and only if *p*," then smile beatifically. Or they go around chanting, "A false proposition implies any proposition, yes it does, yes it does – and *any* proposition implies a true one, so it does too, so it does too." They exhibit curious semantic allergies; for example, when shown patterns of symbols like this:

Most A's are B's

Most A's are C's

Most B's are C's

they shake their heads convulsively, muttering, "No, No, it's invalid, invalid." But as Sir William Hamilton pointed out a very long time ago, "most is a quantifier and like "all" and "some" and "none" and quite obviously the above inference is the basic on it legitimates. (The example is from Geach, *Reason and Argument*.) (Scriven, pp. 147-148)

In this passage, Scriven states that the emergence of informal logic means the end of formal logic. He then ascribes certain properties to formal logic, for example logical words such as "if and only if," "any," "most," and "all." In this passage, the conception from which he dissociates formal logic and informal logic is not stated. At first glance, either logic or formal logic seems to serve as the starting point of this dissociation[v]. Whichever is the case, suffice it to say that

the rise of informal logic is closely connected to the end of formal logic. On the next page, he ascribes a second set of features to informal logic.

(7)

But we can go deeper than this. We can look at the *logical foundations* of informal logic, the concepts and distinctions and relationships that are necessary in order to make sense out of the procedures for the criticism and construction of arguments in science and everyday life.... A most important set of examples of this is the way in which we are forced to reconsider a certain family of old chestnuts, the "fallacy of psychologism," "circularity," the "genetic fallacy," the deductive/inductive distinction, the "naturalistic fallacy," the "context of discovery/context of justification" distinction and the cause/reason distinction. (Scriven, p. 149)

Scriven states that the logical foundations of informal logic include the fallacy of psychologism, circularity, the genetic fallacy, and the deductive/inductive distinction. These properties constitute the logical core of informal logic. If the properties of formal and informal logic do not overlap, then the conceptual distinction between them is clear. Although the starting point of this dissociation is not specified, it is clear that formal and informal logic are the two entities dissociated from the original entity.

The next example is another from Ralph H. Johnson and J. Anthony Blair's article, "Recent Development of Informal Logic." **[vi]**

(8)

Logic might be said to be that discipline which articulates and refines the standards (and their theoretical foundation) of right and wrong in matters of reasoning and argumentation.... There is no point in rehearsing here all the developments in logic since 1879 [when Frege's *Begriffsschrift* was published]. What does require emphasis is simply this. When one speaks of the spectacular development of logic over this period, one is quite clearly referring to formal logic and its many relatives: semantics, pragmatics, metalogic, etc. In this progress, informal logic has not, so far, been a participant. Thus it is possible to say now about informal logic, the very same thing that might have been said about formal logic before Frege's 1789 work: there has not been any significant development since Aristotle. (Johnson and Blair, p. 4)

In this passage, Johnson and Blair attempt to specify the starting point of dissociation: logic. Also, they describe the historical background of the conception

of logic, at one time virtually equal to the conception of formal logic. This idea of formal logic as equivalent to logic is the conception requiring dissociation here. Johnson and Blair then advance the argument that informal logic is, in fact, distinct from formal logic.

(9)

Since 1953, however, there have been signs that the situation is changing and that informal logic has begun to take its place alongside formal logic as an independent branch of logic. (Johnson and Blair, p. 5)

The phrase “alongside formal logic” suggests that the writers believe that informal logic can enjoy equal status with formal logic, as another branch of logic. As a result, formal logic is no longer equivalent to logic, but reduced to branch status. Although specific key features have not yet been ascribed to formal or informal logic in this passage, there is a clear attempt to differentiate informal and formal logic from logic. Immediately after, however, the writers begin ascribing certain properties to informal logic.

(10)

Simply put, our conception is that informal logic is that area of logic (not yet fully canonized as a discipline) which attempts to formulate the principles and standards of logic which are necessary for the evaluation of argumentation. (Johnson and Blair, p. 5)

Johnson and Blair regard principles and standards for evaluating argumentation as the focal point of informal logic. To be more precise, informal logic is tied to natural argumentation. Having reviewed scholarly articles on informal logic, they advance the following point:

(11)

By ‘the theory of argument’ ... we mean the attempt to formulate a clear notion of the nature of argument which is not beholden to formal logical or proof-theoretic models, and to develop principles of criticism and reasoning which come closer to shedding light on natural argumentation than do those of formal logic. (Johnson and Blair, p. 10).

Johnson and Blare are now contrasting key features of informal logic and formal logic: informal logic deals with the nature of argument and principles of criticism, whereas formal logic deals with the nature of argument, based on formal logical or proof-theoretic models. In examples (8)-(11), if the ideas of logic and formal logic as logic are acceptable, the starting point of the dissociation has been

clearly set. Moreover, if the nature of argument based on formal logical or proof-theoretic models is a feature of formal logic, and if the nature of argument not based on formal logical or proof-theoretic models is a feature of informal logic, then the advanced conceptual differentiation has been clarified.

4. *Implications*

With the relationships between logical core and dissociation firmly set, implications of two important issues can be addressed. The first is to determine which perspective better handles dissociation: the dialectical, or the logical. The second is whether dissociation qualifies as an overarching scheme of argumentation, as association does.

Regarding the first issue, all the examples in section 3 are taken from scholarly articles. Adequately evaluating the conceptual distinction in these examples requires judgment of the features ascribed to the subdivided conceptions. This is not a procedural, but rather a cognitive or substantive judgment of the subdivided conceptions. Without sufficient background knowledge of the substantive matter in question (logic, formal logic, deductive logic, inductive logic and informal logic), it is difficult to understand the dissociations advanced by Woods, Scriven, and Johnson and Blair. In other words, placing these entities in a dialectical context and attempting to evaluate them solely according to dialectical, procedural rules may not guarantee adequate assessment; standard objections to the dialectical model apply to the judgment of dissociation. There are four scenarios regarding the relationship between the procedure and the product:

(12)

1. The procedural rules are *followed*, and the dissociation *clearly subdivides* an entity into two.
2. The procedural rules are *followed*, but the dissociation *does not clearly subdivide* an entity into two.
3. The procedural rules are *not followed*, but the dissociation *clearly subdivides* an entity into two.
4. The procedural rules are *not followed*, and the dissociation *does not clearly subdivide* an entity into two.

Since dialectical perspectives focusing on procedural rules and logical perspectives focusing on the quality of product in argumentative exchange form the same judgments in scenarios 1 and 4, these two scenarios are not of interest here. Scenarios 2 and 3, however, merit consideration. Suppose that an

interlocutor accepted the conceptual distinction offered by Scriven or Johnson and Blair, but the distinction did not clearly differentiate between informal logic and formal logic (scenario 2). Alternatively, suppose that the interlocutor disregarded the conceptual distinction offered by these writers, but the distinctions were clear enough to differentiate between informal logic and formal logic (scenario 3). In the former scenario, the dialectical perspective would force us to judge the dissociation as clear; in the latter scenario, it would force us to judge the dissociation as unclear. On the other hand, the logical perspective would force us to reach an entirely opposite judgment for these two scenarios. In other words, neither dialectical nor logical perspectives would help us make a satisfactory judgment. In a case where judgment of a dissociation requires scholarly knowledge, however, depending entirely on the dialectical perspective is more problematic than depending solely on the logical perspective that focuses on the logical perspective. This is because the conceptions dealt with in the dissociation are vital to advancing the scholarship of that particular field of inquiry. This may or may not apply to every type of dissociation; nonetheless, dissociation offered in a scholarly setting can be evaluated more adequately by the product standard, since scrutinizing the content of the subdivided conceptions requires substantial background knowledge.

The second issue, of whether or not dissociation is an overarching scheme of argument, was introduced by Grootendorst (1999). Schellens states that it is not clear which argumentation schemes use dissociation and that the dichotomy between association and dissociation is untenable; association features analogy, causal argument, and argument from authority as examples, whereas dissociation does not have any such counterparts. The relation between association and dissociation according to Schellens is as follows:

(12)

1. Association

1.1 analogy

1.2 causal argument

1.3 argument from authority

1.x etc.

2. Dissociation

2.1 ???

2.2 ???

Reconceptualizing dissociation based on logical core helps clarify the nature of dissociation. In this approach, dissociation is regarded as *disanalogy*. Dissociation as *disanalogy*, however, can qualify either as an overarching conception of dissociation or merely a specific sub-type of dissociation. This article has assumed *disanalogy* to be a general characteristic. If this is the case, a list of sub-types of dissociation should be compiled, offering conceptual and normative accounts of each. On the other hand, if dissociation as *disanalogy* is a specific example of dissociation, this article has treated conception and evaluation of a sub-type of dissociation, but failed to give a general account of dissociation. In this case, future research should focus on a general account of dissociation and compiling a list of other sub-types of dissociation. Whichever the case, inquiries into other sub-types of dissociation must be undertaken in the future.

5. *Concluding remarks*

In this article, I have drawn on Govier's work on a priori analogy to shed light on how dissociation is conceptualized and evaluated. Logical core and key features common to two entities help an arguer advance a cogent a priori analogy. Likewise, logical core helps an arguer clarify a conceptual distinction at the starting point of a dissociation, therefore, scrutinizing the logical core helps evaluate the adequacy of a dissociation. Since this may require background knowledge of the dissociation, evaluating adequacy of dissociation is more cognitive or substantive than procedural. As such, the informal logical perspective is better suited to this purpose, particularly when a dissociation is made in scholarly discourse. The reconceptualization of dissociation offered in this paper has also demonstrated that acceptance of a premise increases the audience's adherence to its conclusion. This presumption, in turn, favors the view that dissociation is a scheme, or product of argumentation.

Topics that merit further investigation into dissociation include (1) compilation and classification of sub-types of dissociation and (2) evaluation of value hierarchy embedded in dissociation. These two topics comprise the research to-do list the author compiled previously (2002, p. 640). This article has drawn on logical core to examine dissociation, but it is not certain if logical core always emerges in dissociation. Whether or not this is the case, work needs to be done on classifying dissociation. Moreover, since this article has focused only on the issue of conceptual distinction, value hierarchy embedded in dissociation will hopefully inspire investigation by those in the field of argumentation.

NOTES

[i] Perelman and Olbrechts-Tyteca emphasized use of ‘philosophical pairs’ in dissociation, such as appearance and reality, the whole and the part, and the infinite and the finite. In contrast, M.A. van Rees claimed that even when the pair is not in use, people advance a dissociation. In this case, X is divided into X and XI, not XI and XII. The author agrees with this view and has modified his conceptualization of dissociation since his previous work (2002, 2003).

[ii] The author’s previous work (2002) summarizes the criticisms that Grootendorst listed and weighs the strength of each. Garssen’s point is taken up here, and Schellens’ point in section 4, since they are the strongest arguments and merit the most discussion.

[iii] Marcello Guarini (2004, p. 167) makes a similar point when he discusses analogy, stating that an arguer can compare three things when offering an analogy.

[iv] The article by Johnson and Blair is quoted from *Rise of Informal Logic* because of easier availability of the source material.

[v] Since the starting point is not clearly specified, there are issues of hidden premises involved here. Another possibility is that the conceptual distinction offered here may not be part of a dissociation, but of something else.

[vi] As stated in section 2 of this article, the article mentioned may not be an extended argument in its totality. However, the point quoted here is, in fact, an example of dissociation.

REFERENCES

Govier, T. (1987). *Problems in Argument Analysis and Evaluation*. Dordrecht, The Netherlands: Foris.

Govier, T. (2001). *A Practical Study of Argument* (5th.ed.) Belmont, CA: Wadsworth.

Grootendorst, R. (1999). Innocence by Dissociation. A Pragma-Dialectic Analysis of the Fallacy of Incorrect Dissociation in the Vatican Document ‘We Remember: A Reflection on the Shoah’. In F.H. van Eemeren, R. Grootendorst, J.A. Blair, and Ch.A. Willard (Eds.), *Proceedings of the Fourth International Conference of the International Society for the Study of Argumentation*, (pp. 286-289). Amsterdam: Sic Sat.

Guarini, M. (2004). A Defence of Non-Deductive Reconstruction of Analogical Argument. *Informal Logic*. 24.2. 153-168.

Johnson, R. H. (May 21, 2003). Personal Communication.

- Johnson, R. H. and J. A. Blair. (1996). The Recent Development of Informal Logic. In R. H. Johnson, *Rise of Informal Logic*, (pp. 2-31, Ch. 1). Newport News, VA: Vale Press. (Original work published in 1980)
- Konishi, T. (2002). Dissociation and its Relation to Theory of Argument. In F. H. van Eemeren, J. A. Blair, C. A. Willard, & F. S. Henkemanns. (Eds.), *Proceedings of the Fifth International Conference on Argumentation*. (pp. 627-640). Amsterdam, The Netherlands: Sic Sat. pp. 637-640.
- Konishi, T. (2003). Establishing Informal Logic through Dissociation. In J. A. Blair, D. Farr, H. V. Hansen, R. H. Johnson, & C. W. Tindale. (Eds.), *Informal logic at 25: Proceedings of the Windsor conference*. (CD-ROM). Windsor, Ontario, Canada: OSSA.
- Perelman, C. and L. Olbrechts-Tyteca. 1969. *The New Rhetoric. A Treatise on Argumentation*. Notre Dame/London: University of Notre Dame Press. (Original work published in 1958)
- Perelman, C. (1982). *The Realm of Rhetoric*. Notre Dame/London: University of Notre Dame Press. (Original work published in 1977)
- Rees, M. A. van. (2005). Dialectical Soundness of Dissociation. In. D. Hitchcock & D. Farr (Eds.), *Uses of Argument: Proceedings of a Conference at McMaster University* (pp. 383-392), Canada: OSSA.
- Scriven, M. (1980). The Philosophical and Pragmatic Significance of Informal Logic. In In J. A. Blair and R. H. Johnson. (Eds.), *Informal Logic: The First International Symposium*. (pp. 147-160, Ch. 9), Inverness, CA: Edgepress.
- Woods, J. (1980). What is Informal Logic. In J. A. Blair and R. H. Johnson. (Eds.), *Informal Logic: The First International Symposium*. (pp. 57-68, Ch. 4), Inverness, CA: Edgepress.
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ISSA Proceedings 2002 - Cases: Their Role In Informal Logic



1. Introduction

One aspect of informal logic is the attempt to apply logic to ordinary discourse. When attempting to do this, one needs to (a) recognize/determine that an argument is present and (b) be able to reconstruct the argument from the ordinary discourse. Doing both of these might be possible by inspection, e.g., you look and you know that there is an argument and what the argument is. Indeed, I believe that there are some simple cases or familiar situations in which this occurs. However, it seems equally clear that there are more complex cases in which neither the recognition nor the reconstruction can be accomplished by inspection. A review of texts shows that rules, guidelines, lists of indicators, lists of steps to be followed, flowcharts, and examples are all frequently deployed as techniques to assist the student to achieve the objectives of identification and reconstruction. These complex cases in which these tools are to be utilized are the interesting ones, both theoretically and pedagogically.

What are the situations encountered and how does one make the necessary determinations in these more complicated cases? What I want to do in this paper is to assess the nature of the two tasks listed above, discuss the roles of several of the tools just mentioned – rules and examples, and look at some ways of conceptualizing what is occurring.

2. Characterization of the Tasks and Processes in Informal Logic

The question of whether there is an argument (or arguments) in a passage is an existence question while the problem of what the argument is, if there is one, is an identification question. There are important distinctions between existence and identification questions, but nonetheless these two questions have important commonalities. In both cases the data available are going to be assessed to see if they satisfy the relevant criteria. Consequently, gaining an understanding of these tasks requires an analysis of:

- a. the various sorts of criteria to be met;
- b. the types of data and their characteristics; and
- c. the variety of possible relationships between the evidence and the determination of whether the criteria are met.

2.1 Criteria

The classical conception is that a criterion specifies a set of features that are

singly necessary and jointly sufficient. Although an instance must have all of the defining features, it is not precluded from having additional features. However, the defining ones are the only ones relevant to whether the criterion is met. If all of the defining features are present, classification succeeds; otherwise it fails.

There are numerous discussions in the philosophical literature about the difficulty of providing such a specification for all concepts. Alternative types of criteria which might be encountered include: sufficient conditions only; statistical rules; a list of necessary conditions which allows elimination in the absence of one them, but provides no sufficient conditions; guidelines or indicators with no specification of the circumstances under which they work although often relatively common exceptions are pointed out. Concepts for which instances may be characterized in a variety of ways and for which it is not possible to come up with a definition in terms of necessary and sufficient conditions are sometimes referred to as “polymorphic”.

The most basic concept in argument identification is that of “argument”. There appears to be no general agreement on the exact definition. But, at least among those dealing with rational argument theory, all include giving reasons in support of a claim as a necessary condition. It is at the next level – determining whether this or that should count as giving a reason where the situation becomes complex and the appropriate criteria to utilize less clear. My belief is that all theories of argumentation experience similar lack of clarity when the attempt is made to apply the theory to ordinary discourse.

2.2 The Evidence

The data itself can contribute to the complexity of the situation. A non-exhaustive list of some obvious examples include:

- a. the evidence provided by a passage may be subject to multiple interpretations;
- b. the evidence provided may underdetermine an answer in the sense that more than one answer may be consistent with the provided information; and
- c. there is the possibility of conflicting data.

2.3 The Relationship

In making a determination if the criteria are met one considers reasons for and against. Initial assessments of how strong the reason is will be subject to change. For example, a “since” may initially be taken as a premise indicator. However, once the context makes clear that it is being utilized as a temporal adverb, the initial belief that the “since” indicates a reason both to suppose that there is an

inference and that what follows is a candidate for being a premise or premises is rejected. Assessing whether the criteria are met is a both a process and a judgment. Consequently, the assessment can change over time. There are a variety of ways in which initially given reasons either can be eliminated, strengthened, or weakened.

Among the situations under which an assessment might change are:

- a. realizing that some of the evidence has been overlooked;
- b. altering the emphasis placed on a particular part of the evidence; and
- c. reevaluating the relevancy of portions of the passage to determining whether the criteria are satisfied.

The reasoning to determine whether or not there is an argument is in most cases, but not all, not going to be definitive. Consequently, both the possibility of there being evidence not previously taken into account and the possibility of being wrong must be allowed for. In other words the reasoning is non-monotonic and defeasible.

Any system for dealing with argument recognition and identification is going to have to be compatible with these aspects of the situation.

Amongst the tools utilized in informal logic texts to help students achieve the goals of argument identification and reconstruction are rules and instances. I want to examine each of these in turn.

3. Rules

Many of the activities of formal logic are rule-based. Consequently, a number of texts that take informal logic to be elementary applied symbolic logic utilize rule-based procedures as the model. However, it has long since been recognized that a strictly algorithmic approach will not do.

Ordinary language is far too complex for us to be able to write a general argument-recognition program. There is no algorithm, or set of precise instructions, by which a person or machine, presented with an arbitrary body of actual discourse, can mechanically pick out in a finite number of steps just those sequences of sentences that are associated with the appropriate claims and thus constitute arguments. (Blumberg 1976, 21).

But there are other construals of “rules” than as algorithms. However, arguments have been raised against these construals as well. The algorithm option is considering rules as a set of universally applicable syntactic rules that, if applied, would correctly lead to both the determination that an argument is present as well as what the argument is. A second rule-oriented approach is to have *ceteris*

paribus rules – rules that are utilizable other matters being equal. A third rule-oriented approach is to propose guidelines, e.g., a list of indicator words which frequently, but not invariably, indicate that an inference is present. All of these variations of a rule-oriented approach face difficulties.

Govier (1990) argues that rules for the purposes we are considering could not hold with strict universality. This eliminates the first type of rules – algorithms. On the other hand rules of thumb despite being called “rules” are, at best, indicators. They lack the systematicity to be true rules. Rejecting them as rules does not mean they are not useful as their frequent inclusion in informal logic texts attests. The plausible candidate is a rule with a ceteris paribus clause. But then how do we deal with the application of ceteris paribus clauses? The application of such clauses appears to require either an exhaustive listing of the conditions under which the ceteris paribus clauses apply or a set of rules is available to govern their application. The exhaustive listing presupposes knowing all the situations in which the ceteris paribus clauses are applicable – something the inclusion of the clause tacitly acknowledges is not the case. Rules for applying rules raise the specter of infinite regress.

It seems to me that there are yet other possible construals of rules besides those considered by Govier above, e.g., default logic, sets of rules which form heuristics, etc. The arguments against rule-based systems considered above may be correct, but they are working with an impoverished conception of rules. Perhaps a rule-based system can be made to work. Certainly systems such as default logic provide a rule-based way to establish a non-monotonic reasoning system with defeasibility characteristics.

However, there is another alternative to explore.

4. Cases

A second type of entity that regularly occurs in informal logic texts is the individual case or instance – as exercises, examples, or illustrations. Are all individual cases the same? What is the role for individual cases in informal logic? Do individual cases play roles other than as examples, illustrations, and exercises?

First what is the variety of ways in which we consider individual instances? Among the words used to refer to specific cases in English is the following list with definitions culled from *Webster's II New Collegiate Dictionary*:

**case* – <Lat. *casus* p. part of *cadere*> – to fall 1. An instance of the existence or

occurrence of something. 3. A set of circumstances: SITUATION. 4. A set of reasons, arguments, or supporting facts offered in justification of a statement action, or situation. (Plus another 7 other possibilities.)

**exemplar* - <Lat. *exemplum*> - example 1. One worthy of imitation: MODEL. 2. A typical example 3. An ideal serving as a pattern: ARCHETYPE. 4. A copy, as of a book.

**example* -< Lat. *exemplum. eximere* - to take out> 1. One representative of a group 2. One serving as a specific kind of pattern <a good example> 3. A case or situation serving as a precedent or model for another one that is similar. 4.a. A punishment given as a warning for others. b. The recipient of such punishment. 5. A problem or exercise that illustrates a method or principle. - for example - Serving as an illustration, model, or instance.

**illustration* - 1. An act of clarifying or explaining or the state of being clarified or explained. 2. Something used to clarify or explain. 3. Visual matter for clarifying or decorating a text. 4. Obs. Illumination.

**model* - <Lat. *Modulus* -dim.of *modus*> - measure 1. A small object, usw. built to scale, that represents another, often larger object. 2. A preliminary pattern serving as a plan from which an item not yet constructed will be produced. 3. A tentative description of a theory or system that accounts for all of its known properties. 4. A design or style of an item. 5. An example to be imitated or compared <a model of politeness> 6. The subject for an artist or photographer 7. One whose job is to display clothes or other merchandise.

**pattern* - 1.a. An archetype b. An ideal worthy of imitation 2. A plan, a diagram, or model to be followed in making things. 3. A representative sample: *SPECIMEN* (Plus 7 more definitions)

prototype - <Gk: *protos* - first + *tupos*> - model 1. An original type, form, or instance on which later stages are based or judged <the V-1 as a prototype of modern rockets> 2. A typical early example 3. Biol. A primitive or ancestral form or species.

These words and their lexical definitions suggest a number of different functions for individual cases. One function is simply an instantiation qua instantiation - nothing special, but the relevant criteria are satisfied. A second function is as an ideal instantiation - somehow the criteria are especially well satisfied or satisfied in an ideal way without complications. A third view has them functioning as a guide in the consideration of additional cases.

As either mere instantiations or ideal instantiations cases might play several

roles. The first view is that the instantiations are merely used to illustrate the theory. A second view is that they are necessary to provide the interpretation of theoretical terms in rule based formal systems. How is the formal system to be interpreted in terms of practice? One way is to use cases where the relevant terms apply. Providing rules for the interpretation of rules only leads to an infinite regress so the utilization of cases is essential. However, when functioning as a guide cases can not only provide cognitive content, but also play a central role in the reasoning process with respect to that subject matter.

What I want to explore is the possibility that a role of instances in informal logic might be to provide a *case-based reasoning system*. "Case-based reasoning is a sequence that proceeds from one (or a series of) preceding case to one similar, subsequent case, and draws a conclusion about the subsequent case, based on, similar, relevant features of the preceding cases. In arguments about precedents, the subsequent case needs to be judged in relation to some existing rule or practice, and the problem is whether it might lead to a new rule, or modification of the existing rule." (Walton 1992, 118)

It has been suggested that some of the characteristics of a domain that indicate that a case-based approach might be suitable include:

1. records of previously solved problems exist;
2. historical cases are viewed as an asset which ought to be preserved;
3. previous cases are frequently cited;
4. specialists talk about their domain by giving examples; and
5. experience, rather in the field or working on exercises, is at least as valuable as theoretical material. (Harrison 1997). On these characteristics it would appear that informal logic might be a viable candidate.

5. Examples of Case-based Reasoning

Instances of case-based reasoning are not unknown. In a number of areas of endeavor case-based reasoning is construed as central: scripts in various social situations; judges reasoning from prior cases and lawyers looking for precedent cases; case studies in MBA programs; casuistry in ethics; and, programs used in artificial intelligence in conjunction with categorization and pattern recognition. Before characterizing case-based reasoning more fully in the abstract it would be useful to have an example. Any of the examples mentioned above would work, but I am going to examine the role Kuhn has proposed for exemplars in science. Given the controversy that interpreting Kuhn frequently evokes I intend to allow Kuhn to do as much of his own talking as I can by liberal use of quotations.

By exemplar Kuhn means “the concrete puzzle solutions that students encounter from the start of their scientific education, whether in laboratories, on examinations, or at the ends of chapters in scientific texts. To these shared examples should, however, be added at least some of the technical problem-solutions found in the periodical literature that scientists encounter during their post-educational research careers and that also show them by example how their job is to be done.” (Kuhn 1996, 187)

“Close historical investigation of a given specialty at a given time discloses a set of recurrent and quasi-standard illustrations of various theories in their conceptual, observational and instrumental applications.” (Kuhn 1996, 43)

What is the kind of knowledge resident in exemplars?

“When I speak of knowledge embedded in shared exemplars, I am not referring to a mode of knowing that is less systematic or less analyzable than knowledge embedded in rules, laws, or criteria of identification. Instead I have in mind a manner of knowing which is misconstrued if reconstructed in terms of rules that are first abstracted from exemplars and thereafter function in their stead. Or, to put the point differently, when I speak of acquiring from exemplars the ability to recognize a given situation as like some and unlike others that one has seen before, I am not suggesting a process that is not potentially fully explicable in terms of neuro-cerebral mechanism. Instead I am claiming that the explication will not, by its nature, answer the question, ‘Similar with respect to what?’ That question is a request for a rule, in this case for the criteria by which particular situations are grouped into similarity sets, and I am arguing that the temptation to seek criteria (or at least a full set) should be resisted in this case. It is not, however, system but a particular sort of system that I am opposing.” (Kuhn 1996, 192).

How is the practice of normal science carried out?

“The practice of normal science depends on the ability, acquired from exemplars, to group objects and situations into similarity sets which are primitive in the sense that the grouping is done without an answer to the question, ‘Similar with respect to what?’ One central aspect of any revolution is, then, that some of the similarity relations change. Objects that were grouped in the same set before are grouped in different ones afterward and vice-versa.” (Kuhn 1996, 200).

“Philosophers of science have not ordinarily discussed the problems encountered by a student in laboratories or in science texts, for those are thought to supply

only practice in the application of what the student already knows. He cannot, it is said, solve problems at all unless he has first learned the theory and some rules for applying it. Scientific knowledge is embedded in theory and rules; problems are supplied to gain facility in their application. I have tried to argue, however, that this localization of the cognitive content of science is wrong. After the student has done many problems, he may gain only added facility by solving more. But at the start and for some time after, doing problems is learning consequential things about nature. In the absence of such exemplars, the laws and theories he has previously learned would have little empirical content." (Kuhn 1996, 187-188).

"A phenomenon familiar to both students of science and historians of science provides a clue. The former regularly report that they have read through a chapter of their text, understood it perfectly. But nonetheless had difficulty solving a number of the problems at the chapter's end. Ordinarily, also, these difficulties dissolve in the same way. The student discovers, with or without the assistance of his instructor, a way to see his problem as like a problem he has already encountered. Having seen the resemblance, grasped the analogy between the two or more distinct problems, he can interrelate symbols and attach them to nature in the ways that have proven effective before." (Kuhn 1996, 189).

6. Case-based Reasoning In the Abstract

On the basis of the discussion in the artificial intelligence literature there appears to be a broad understanding of the components involved in deploying case-based reasoning.

"It is the job of the case based reasoner to have a library of cases; a method of storing new cases that allows them to be found again when needed; an indexing scheme that reflects processing that has gone on while a case was initially considered; a method of partial matching that allows new cases to be considered in terms of similar ones; and a method of adaptation that allows information garnered from one case to be applied to another." (Riesbeck and Shank 1989, 24)

Utilizing these components case based reasoning consists of the following four steps:

1. retrieving the most similar case (or cases) comparing the case to the library of past cases;
2. reusing the retrieved case to try to solve the current problem;
3. reviewing and revising the proposed solution if necessary;

4. retaining the final solution as part of a new case.

These steps can be broken down into more specific tasks:

1. Retrieving a case starts with a problem description and terminates when a best matching case has been found. The sub-tasks involve: identifying relevant problem descriptors; searching for similar cases; returning sufficiently similar cases on the basis of a similarity threshold of some kind; and selecting the best case from the cases returned.

2. Reusing the retrieved case solution in the context of the new case consists of: identifying the differences between the retrieved and the current case; and identifying the part of a retrieved case which can be transferred to the new case unmodified or with modification can be transferred.

3. Reviewing and revising occurs after a solution has been proposed. It focuses on: evaluating the proposed solution and, if there are faults, with the attempt to modify the proposed solution in ways that eliminate the fault.

4. Retaining the case incorporates whatever is useful from the new case into the case library. This involves deciding what to retain and in what form to retain it; how to index the case for future retrieval; and integrating the new case into the case library. (Harrison 1997).

This general characterization still leaves many specific issues to be resolved. There are numerous points at which instances of case-based reasoning can vary. There are a variety of different methods for organizing, retrieving, utilizing and indexing the knowledge retained in past cases. The two general problems are:

- a. how to find matching cases and
- b. how to achieve the necessary knowledge base of cases.

Sub-questions of the first include:

- 1. What is the search strategy to be employed?
- 2. How are cases indexed for efficient retrieval?
- 3. How is the similarity between a new problem and a retrieved case assessed?

Sub-questions of the second include:

- 4. How are cases selected for retention?
- 5. How is indexing information learned?
- 6. How is additional domain knowledge required for the assessment of similarity acquired?
- 7. How does generalization occur during learning? (Bareiss 1989, 96)

There can be variations in: the type of information represented by a case – instance, paradigm, analogy, search strategy; indexing systems; criteria for making similarity judgments; whether the similarity judgments involve global or local similarity, criteria for determining the hierarchy among matching cases; criteria to determine which cases are retained in the library; the extent to which contextual information is included with the cases; and the permissible moves to making in modifying a case or in revising a case.

Besides these theoretical differences there are also domain specific differences in how similarity judgments are made and how priorities among cases are determined, i.e., how these determinations are handled in casuistry versus the law versus science.

7. Rules versus Cases

What are the differences being claimed between a rule-based system and a case-based system? Separation is going to be imperfect – a case-based systems is going to contain some rules or guidelines while a rule-based system with generally be supplemented with cases. Nonetheless, there appear to be important differences.

On the case-based view the concept of argument is represented extensionally. The definition of the concept is implicit in its instances; no explicit definition is abstracted. Consequently, information about feature correlations, acceptable feature values, and realizable concept instances is preserved in the instances.

When using case based reasoning, the need for knowledge acquisition can be limited to establishing how to characterize cases rather than be concerned about ascertaining what rule covers all of the cases. Case based reasoning allows the case base to be developed incrementally and continuously. If one were to utilize rules instead, then cases would be discarded thereby eliminating the rule base that might later need to be revised. Decisions to generalize are always incomplete as not all possible contingencies will have been taken into account.

One might view a set of cases as a body of knowledge from which rules might be constructed, but have not yet been constructed. On this position dealing with cases is simply a postponement of induction to a rule. This postponement, however, has a number of key characteristics. “A rule induction generalization draws its generalizations from a set of... examples before the target problem is even known; that is it performs eager generalization.... This is in contrast to CBR, which delays (implicit) generalization of its cases until testing time – a strategy of lazy generalization.” (A.Golding nd). Moreover, eager generalization or rule induction emphasizes the statistical power of a number of cases rather than the

unique properties of a particular case. Rule induction “derives its power from the aggregation of cases, from the attempt to represent what tends to make one case like or unlike another. CBR derives its power from the attempt to represent what suffices to make one case like or unlike another. CBR emphasizes the structural aspects of theory-formation, not the statistical aspects of data.” (Loui 1997). “General principles are impoverished compared with original experiences. Generalization is never perfect and there is always the danger of losing some quite important information.”

In case-based reasoning a case from the library of cases is transformed to achieve the solution providing flexibility whereas in rule-based reasoning a rule qua rule is to be applied to the situation with no transformation.

Aha (1997, 3-4) has suggested the following benefits of lazy problem solving in the context of designing expert systems:

1. *Elicitation*: Lazy approaches require the availability of cases rather than difficult-to-extract rules. (This is also true for most machine learning approaches.) This can significantly refocus knowledge acquisition efforts on how to structure cases.
2. *Problem Solving Bias*: Because cases are in raw form, they can be used for several different problem solving purposes. In contrast, rules and other abstractions can generally be used for only the purpose that guided their compilation.
3. *Incremental Learning*: Lazy approaches typically have low training (i.e., data processing) costs in comparison with approaches that attempt to compile data into concise abstractions. However, the trade off often exists that lazy approaches require more work to answer information queries, although smart caching schemes can be used to decrease this workload (e.g., Clark & Holte 1992).
4. *Disjunctive Solution Spaces*: Lazy approaches are often most appropriate for tasks whose solution spaces are complex, making them less appropriate for approaches that replace data with abstractions (Aha 1992).
5. *Precedent Explanations*: By virtue of storing rather than discarding case data, lazy approaches can generate precedent explanations (i.e., based on the retrieved cases). Characteristic (i.e., abstract) explanations, if requested, can always be derived from the stored set of cases in a demand-driven manner.
6. *Sequential Problem Solving*: Sequential tasks often benefit from the storage of a history in the form of the states that lead to the current state. Lazy approaches are used to store this information, which can then be used, for example, to

disambiguate states (e.g., McCallum1995).

Psychologically there appears to be an advantage as well. For humans cases appear to be easier to retain than rules. It is difficult to remember an abstraction, but it is easy to remember a good coherent story.

There appear to be a number of important differences between case-based systems and rule-based systems in terms of flexibility, the type of characteristics emphasized, and the ability of non-experts to start applying knowledge to new situations.

*8. Case-based Reasoning in Informal Logic***[i]**

An interesting characteristic of introductory courses in either formal or informal logic is their reflexive nature. While the subject matter is not reasoning itself, but rather some type of normative theory about the results of reasoning, we are nevertheless presupposing that the students do possess both the ability to reason and to evaluate their reasoning. The focus of our concern in this paper has been the meta-reasoning which goes on in informal logic. It is somewhat ironic that the meta-level logic appears to be more sophisticated than the object-level logic customarily considered.

I believe that case-based reasoning is already utilized in many informal logic texts, but not explicitly recognized. Common cases that occur are worked examples or answers to problem sets in the back of the book. It is also striking how frequently discussions with students are in terms of experienced problems and examples. However, there has been limited discussion of the assumptions and presuppositions underlying this approach when applied to informal logic as well as the criteria to use in selecting the appropriate cases.

In developing a case-based method for informal logic there is a fairly obvious set of categories of questions that would need to be addressed:

- *Questions about the individual cases:

- *What is to count as a case for informal logic?

- *What are the features that it is important to include in a case?

- *Questions about the collection of cases or library:

- *How should the cases be indexed?

- *Along what dimensions should similarity judgments be made?

- *What would an appropriate set of cases for informal logic be?

- *What would constitute a full set of cases for an individual to qualify as a skilled argument identifier and evaluator?

*What would constitute a full set for someone who is an expert in some particular field?

*What should the stages be in developing a library during the course of a semester long informal logic course? What would the contents of a library at the end of a semester long course be?

*Questions about reuse:

*What are the factors that enter into the determination of whether a solution can simply be copied?

*What are the modification and adaptation techniques that can be employed?

*Questions about review and revision:

*What are the standards for having achieved a satisfactory solution?

*What sorts of changes result in a revision of the solution?

*Questions about retention:

*What are the factors involved in determining what new information is retained?

*How is new information integrated into the already existing library of cases?

Answers to these questions are going to vary with the conception of argument employed and the standards employed to determine if an argument is “good”. Spelling out the case set and methods for even one of the conceptions of argument would be a substantial undertaking let alone undertaking the task to do a comparative review of differing conceptions.

Despite these demurrals certain sorts of situations one would want in cases for case-based reasoning in informal logic seem relatively apparent: the standard problems involved in achieving standard logical form, e.g., eliminating ambiguity, etc.; various complex argument diagramming situations; single/complex arguments contrasts; ampliative/non-ampliative argument contrasts; logically correct/logically incorrect argument contrasts; sound/unsound argument contrasts; arguments which exhibit overall argument strength versus those that do not.

A potentially interesting empirical study would be to subdivide the collection of informal logic texts into those with roughly the same conception of argument and study the set of examples and worked problems provided by the authors, analyze their contents, their sequencing, any cross-referencing that occurs, the centrality of arguments in each of the examples, etc.

While attempting to determine the overall implications of adopting a case-based method for informal logic would require having answers to the above questions,

some implications seem rather immediate:

Arguments should be included in all of the cases. This suggests that issues such as ambiguity, vagueness, etc, should be looked at in the context of arguments rather than independently;

Suggests not immediately starting with complex cases from ordinary discourse, but rather developing a case set in a carefully staged way. The overall case set should illustrate commonly encountered problems including situations subject to multiple interpretations;

It may explain why lists of key words or inference indicators work to the extent that they do and are also as frustrating as they are. Lists of key words or inference indicators can be construed as decontextualized component parts of cases.

What are the pedagogical implications of such a view for both the structure of texts and courses in informal logic? Theoretical considerations arising from the theory of argument being deployed would be one consideration in determining what is presented in the cases and how they are sequenced, but psychological factors should also be taken into account. What is the data on students being able to start out comprehending a complex environment in which they are required to do multiple tasks and retain what they are taught? What is the literature regarding learning a skill?

This paper has attempted to examine the role of cases in informal logic and argue that they have a much more central role to play than that of illustrations. Case-based reasoning plays central role in determining whether an argument exists and what that argument is. It appears productive to further explore the conception of meta-reasoning in informal logic as case-based reasoning.

NOTES

[i] There are apparently some discussions of the application of case-based reasoning to informal logic that I was not able to gain access to prior to the deadline for completing this paper - Wisdom (1957/1991) and Govier (1980).

REFERENCES

Aamondt, Agnar and Plaza Enric. (1994). A Case-based Reasoning: Foundational Issues, Methodological Variations, and System Approaches. @ *Artificial Intelligence Communications* 7 (1): 39-59.

Aha, D. W. (1992). "Generalizing from case studies: A case study." *Proceedings of the Ninth International Conference on Machine Learning* (pp. 1-10). San

Francisco: Morgan Kaufmann.

Aha, David W. (1997). *"The Omnipresence of Case-Based Reasoning in Science and Application."* (Technical Report AIC 98 002). Washington, DC: Naval Research Laboratory, Navy Center for Applied Research in Artificial Intelligence.

Bareiss, Ray. (1989). *Exemplar-Based Knowledge Acquisition*. New York: Academic Press Inc.

Bambrough, Renford (1960-61) "Universals and Family Resemblances. *Proceedings of the Aristotlean Society* 61: 207-222.

Blumberg, Albert E. (1976). *Logic: A First Course*, New York: Alfred A. Knopf.

Clark, P., & Holte, R. (1992). "Lazy partial evaluation: An integration of explanation-based generalisation and partial evaluation." *Proceedings of the Ninth International Conference on Machine Learning* (pp 82-91). San Francisco: Morgan Kaufmann.

Colburn, Timothy R. (1999). Chapter 7: A Models of Reasoning." *Philosophy and Computer Science*. Armonk, NY: M. E. Sharp, Inc.

Golding, Andrew R. (nd). *"Case-based Reasoning."* UPEDIA.COM The Free Encyclopedia

Golding, Martin P. (1984). *Legal Reasoning*. New York: Knopf

Govier, Trudy. (1980). "More on Inductive and Deductive Arguments." *Informal Logic Newsletter* 2: 7-8.

Govier, Trudy. (1999). *The Philosophy of Argument*. Newport News, VA: Vale Press.

Grandy, Richard. (1979). "Universals or Family Resemblances." *Mid-Western Journal of Philosophy* 11-17.

Hamel, E. (1967). "Casuistry." in *New Catholic Encyclopedia*, iii. New York: McGraw Hill

Harrison, Ian. (1997). *"Case Based Reasoning."* Artificial Intelligence Institute University of Edinburgh. <http://www.aiai.ed.ac.uk/links/cbr.html>

Hesse, Mary. (1966). *Models and Analogies in Science*. South Bend: University of Notre Dame Press.

Holyoak, Keith J. and Thagaard, Paul. (1995). *Mental Leaps*. Cambridge , MA: MIT Press

Jonsen, Albert R. and Toulmin, Stephen. (1988). *The Abuse of Casuistry*. Berkeley: University of California Press.

Klein, Hans E.(ed.). (1988). *Case Method Research and Application: Selected Papers of the Fifth International Conference on Case Method Research and Case Method Application*. Needham, MA: World Association for Case Method Research

- Kuhn, Thomas S. (1996). *Structure of Scientific Revolutions 3rd, ed.*. Chicago: University of Chicago Press
- Loui, R. P. (1997). "Case Based Reasoning and Analogy." Manuscript.
- Loui, R. P. (1998). "Some Philosophical Reflections of the Foundations of Computing." Manuscript.
- McCallum, R. A. (1995). "Instance-based utile distinctions for reinforcement learning." *Proceedings of the Twelfth International Conference on Machine Learning*. Lake Tahoe, CA: Morgan Kaufmann.
- Nelson, Benjamin. (1973). "Casuistry." in *Encyclopedia Britannica v*, Chicago: Benton Pearl, Judea. Probabilistic Reasoning in Intelligent Systems. San Francisco: Morgan Kaufmann, 1988.
- Rhode, David W. and Spaeth, Harold J. (1976). *Supreme Court Decision Making*. San Francisco: Freeman
- Riesbeck, Christopher K. and Schank, Roger C. (1989). *Inside Case-based Reasoning*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Simpson, Jr. Robert L. (1985). *A Computer Model of Case-Based Reasoning in Problem Solving*, Ph. D. thesis , Technical Monograph GIT-ICS-85/18, School of Information and Computer Science, Georgia Institute of Technology
- Walton, Douglas. (1992). *Slippery Slope Arguments*, Oxford: Clarendon Press (Reprinted by Vale Press)
- Walton, Douglas. (1996). *Argument Structure: A Pragmatic Theory*. Toronto: University of Toronto Press.
- Webster's II New Collegiate Dictionary*. (1999). New York: Houghton Mifflin Co.
- Wisdom, John. (1957/1991). *Proof and explanation*. The Virginia Lectures by John Wisdom. S. Barker (ed.) Lanham, MD: University Press of America.
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ISSA Proceedings 2002 - Formal Logic's Contribution To The Study

Of Fallacies



Abstract

Some logicians cite the context-relativity of cogency and maintain that formal logic cannot develop a theory of fallacies. Doing so blurs the distinction between ontic and epistemic matters and engenders a subjectivism that frustrates the project of logic to establish objective knowledge. This paper reaffirms the distinction between ontic and epistemic matters by establishing objective criteria for truth, validity, and cogency. It emphasizes the importance of the ontic notion of logical consequence underlying intelligible discourse. By clarifying a notion of fallacy it shows how formal logic contributes to fallacy theory.

1. The project of informal logic

The desire of critical thinking theorists, pragma-dialecticians, and informal logicians to dethrone formal logic has animated and defined their movement since its inception in the 1970s. In general, three matters mark their dissatisfaction with formal logic.

1. They believe that the mathematical development of formal logic has led to its becoming irrelevant to the needs of everyday discourse whose medium is natural language.
2. They maintain that it focuses too narrowly on the implicational relationships among propositions and relegates to the extralogical 'everything else' important to the evaluation of arguments.
3. They criticize its being asymmetrical in respect of its inability to formalize fallacious reasoning and even invalidity as it has been able to develop decision procedures for valid arguments.

Wanting to analyze informal fallacies and to develop a typology to categorize them impelled informalists to develop alternative theories of argumentation. These matters have remained core concerns for them. Two essential features of arguments underpin their complaint about the posture and project of traditional logic.

1. They take an argument to consist in considerably more than a set of propositions, where one is thought to follow *logically* from others. Rather, an argument consists in a set of premises that allegedly support a conclusion with an

intention to change someone's belief. An argument is a dynamic *social activity*. Thus, argument analysis requires recognizing the question-answer, or the challenge-response, nature of interactive dialogue.

2. They insist on the *contextuality* of an argument. A good or bad argument consists in its success or failure to persuade a participant of a belief or to act in a certain way. An argument is evaluated in terms of premise acceptability, premise weight and relevance, and in terms of the suitability of the inferential link between premises and conclusion, all of which are *relative* to persons at times.

By demoting formal analysis of implicational relationships and elevating the contextual and dynamic nature of arguments, these logicians study real-life, ordinary language, arguments. The distinction between matter and form is not important for their method of analysis. In this way they believe themselves to close the gap between logic and the genuine needs of human beings.

2. Three mistakes in reasoning about argumentation

However, when these logicians take an argument to be a dynamic relationship involving an audience or disputants, they make three metasystematic mistakes.

1. By taking an argument to be a social activity with an aim to persuade a participant of one or another belief, they attribute *agency* to an argument when agency is properly a feature of an arguer. They confuse an argument with an arguer, and thus they confuse their respective evaluations.

2. By evaluating an argument in terms of premise acceptability, weight, and relevance, and in terms of suitable inferential links, they relativize cogency to the dispositions of one or another audience.

They destroy an important epistemic/ontic distinction in two respects:

1. they conflate inference and implication; and

2. they conflate thinking and being. A 'good argument' becomes a 'convincing argument' whose goodness is set by the standards of a given audience at a given time, irrespective of whether or not an argument is objectively valid or invalid, an argumentation cogent or fallacious.

3. They confuse 'argumentation theory' with 'persuasion theory', part of which *includes* argumentation, but more narrowly construed as consisting in propositions and their logical relationships. Here again they tend to confuse evaluating an argument with evaluating the *various skills* of an arguer.

While these logicians desire norms of good argument, they seem unable to provide an objective, or universal, foundation for such norms. Closing the gap

between the project of logic and the needs of human beings seems to have provided license for unrestrained arbitrariness when it comes to assessing the cogency of an argumentation. In closing one gap they widened another one more pernicious than the first – that gap between distinguishing knowledge from narrow-minded opinion. When these logicians affirm the participant relativity of argumentation, when they place emphasis on cognitive aspects of argumentation, when they embrace the ‘extralogical’ within the project of logic, and when they emphasize argument context and the pragmatics of argumentation, they dangerously court psychologism and jeopardize establishing a sound fallacy theory. The *arguer* now takes center stage in this framework of assessment. The project of logic shifts from determining logical consequence to assessing an arguer’s ability to package information. Moreover, the *audience* also takes center stage from this perspective. Informal logicians *seem* to have devoted considerable attention to ‘good argumentation’ when really they have examined empirically *how different human beings make up their minds*. This is rather more a concern of psychology and sociology than of logic. No longer is it a logical question of whether an argument is valid or invalid, etc., but a metasystematic question of whether an argument works or does not work in a given context. This raises a question about the purpose of logic.

3. A classical notion of logic’s purpose

Taking logic as a part of epistemology whose goal is to cultivate objectivity, we hold that logic aims to develop concepts, principles, and methods for making a decision according to the facts. The need for logic would be obviated were humans omniscient or infallible. From a classical perspective, logic has been concerned with “the perfection of criteria of proof, the development of objective tests to determine of a given persuasive argumentation whether it is a genuine proof, whether it establishes the truth of its conclusion” (Corcoran 1989b: 37). The feeling of certainty is not a criterion of truth and persuasion is not necessarily proof. Perhaps we can agree with John Corcoran, who construes objectivity to be an important human *virtue*. He writes:

All virtues are compatible with objectivity, and most, if not all, virtues require it in order to be effectual and beneficial. Without objectivity the other virtues are either impossible or self-defeating or at least severely restricted in effectiveness. (1989b: 38)

By basing human dignity and mutual respect on the universal desire for objective

knowledge, we can affirm an essential role of formal logic in everyday life – to overcome ignorance as much as possible. Assuming this posture helps to avoid reducing study of argumentation to psychology, or cognitive science, or even to rhetoric and persuasion theory.

The special problem of the informalist approach to argument analysis is to insist on *contextuality*. This emphasis subverts logic's aim to develop topic neutral methods for establishing knowledge and steers it toward particularist standards of analysis. By declaring that a good argument need not be valid, that fallaciousness and cogency are participant relative, they focus on an agent's ability to manipulate language and situations. This neglects an *ontic underpinning* of truth and falsity, validity and invalidity, and cogency and fallaciousness. If the purpose of argumentation is persuasion, then of course formal logic, which emphasizes logical consequence, is irrelevant, save for encountering participants knowledgeable about formal matters. Concern with formal matters even becomes obstructive. But then to say that someone is mistaken becomes arbitrary. Logic effectively surrenders concern with epistemic methodology and undertakes studying rules for regulating disputational discourse.

4. Woods and Walton attempt to bridge the difference

John Woods and Douglas Walton have been acutely aware of a 'cognitivist' tendency among informal logicians. Their studies of fallacies and argumentation have aimed to avert a collapse of informal logic into a psychologistic quagmire.

With informalists Walton takes an argument to be more than a 'deductive system' of propositions; an argument is a logical dialogue game. He tries to rescue fallacy theory from psychologism by maintaining that a bad argument does not have to *seem* to be valid in order to be a fallacy. Rather, making a case that an argument is bad is a normative claim. The principle underpinning his position is that propositional logic is the *inner core of argument* and that dialogue game is the *outer shell of argument*. However, what Walton gives to formal logic with one hand he takes back with the other. He writes:

But in speaking of criticism in disputation we are importing a framework, a *conception of argument* that includes more than just the semantic structure of the propositions that make up the core of the argument. It includes as well the *pragmatic structure* of certain conventions or rules of argument — locution rules, dialogue-rules, commitment-rules, and strategic rules. (Walton 1987: 95)

Walton's theory of argumentation is firmly ensconced in an informalist

framework. This conception of argumentation affects his definitions of formal and informal fallacy. Again, he says:

[Thus] a fallacy is a *type of move in a game of dialogue that violates a certain rule of the game*. Such a fallacy may be one of the kinds traditionally called an “informal” fallacy. *Formal fallacies* are those that pertain to the formal logic element, the core of the game that has to do with *relations of validity in the set of propositions* advanced or withdrawn by the players. *Informal fallacies have to do with rules and procedures of reasonable dialogue*. (Walton 1987: 95-96)

Walton reneges on his commitment to the role that formal logic has for argumentation theory and for fallacy theory. He shifts focus from argument assessment to arguer assessment and abandons objective knowledge.

Still, Woods and Walton have aimed to ‘formalize’ certain aspects of reasoning in ordinary discourse, as their numerous studies of fallacies attest. Woods in particular cites two distinct advantages to using formal methods. “One is the provision of clarity and power of representation and definition. The other is provision of verification *milieux* for contested claims about various fallacies” (Woods 1980: 59). He holds that “being a mathematical system is not necessarily a liability for a theory of the fallacies” even if fallacy theory cannot fully embrace certain mathematical features (Woods 1980: 58). Still, he holds that a fallacy theory need not be constructed along the lines of an axiomatic logistic system, which, in any case, he recognizes to be a virtual impossibility. However, he continues, “we know ... that axiomatic formalization does not exhaust *formal treatment*” (Woods 1980: 59). Woods writes that his and Walton’s analyses of the fallacies have considerably benefited by “repos[ing] the theoretical burdens of the fallacies in probability theory, acceptance theory, epistemic and doxastic logic, and rationality theory” (Woods 1980: 60).

This leads me to suggest not that the mature theory of the fallacies is a branch of logic that is essentially informal, but rather that the mature story of the fallacies is a branch of formal theory that is essentially extralogical in major respects. The formal theory of the fallacies is not (just) logic. (Woods 1980: 60)

Woods here, as Walton elsewhere, *vacillates* between the two poles; this vacillation pivots on an equivocal use of ‘formal’. Our primary concern as logicians is not merely with a systematization, or *formalization*, of ordinary language argumentation according to the pragmatics of discourse, but with the inherent cogency or fallaciousness of argumentation. *And this just concerns logical consequence*, the traditional bailiwick of formal logicians. Woods and

Walton have aimed to rescue the project of informal logic by employing some of the theoretical apparatus of formal logic, enriched, they believe, by notions of relevance and dialogue. However, they seem not to have fully rescued cogency and extricated the analysis of an argumentation from a contextualism that exposes analysis to unrestricted subjectivism.

5. Argumentation theory a part of persuasion theory

In reasoning about argumentation some logicians persist in confusing the *activity of arguing* with the *activity of persuading*. This confusion leads them to mistake the proper object of argument assessment and to lose sight of a concern with truth and falsity. They mistakenly call an argument good or bad, or right and wrong, when they really assess the arguer and his/her audience. While the goal of a persuader is to convince, the goal of a logician is to assist in establishing knowledge. This is impossible to achieve by basing truth and falsity, validity and invalidity, and cogency and fallaciousness on the subjective predispositions of one or another audience at one or another time.

Invoking Aristotle's notion of the four causes in connection with his notion of *technê* helps to make sense of the complexity of practices in the art of persuasion. In this connection, then, the *final cause* is a desired action on the part of a participant. The *material cause* is a participant. The *formal cause* is a belief. The *efficient*, or productive, cause is a persuader. Arguments, or argumentations, then, are a persuader's instruments. Formal logic perfects an argumental instrument. Just as no saw can cut wood, but the person using the saw cuts wood, so no argumentation can persuade a participant to believe something or to act in a certain way. Rather, an arguer using an argumentation provides *occasion* for a participant to change his/her beliefs. It is a category mistake to attribute agency to an argument. Nor, in truth, does an arguer convince anyone. Rather, presented with information in various *forms*, a participant grasps something in his/her mind as a mental act: this person experiences an ordered chain of reasoning to come to an understanding.

A successful persuader must know his/her own strengths and weaknesses in respect of the four causes. Considering *the entire* arena of persuasion, there are many points of evaluation: how adept a speaker is with rhetorical devices or knowledge of language and especially with knowledge of an audience's beliefs. Considering *only* the argumentation itself, we assess it as an argumental *instrument*. An argumentation, then, can be assessed as a good or bad instrument

independent of a context and, thus, independent of the beliefs of an audience. The question “Is it a good argumentation?” for a logician is analogous to the question “Is it a good saw?” for a cabinetmaker. Being a good saw is independent of the wood it is used to cut. Of course, we are working within a domain and thus with ‘intended interpretations’, that is, with intended uses. Nevertheless, granting this, a good saw involves: being composed of the right metal, having the right temper; the right shape, the right handle, weight, balance, number of teeth, angle of teeth, sharpness, etc. All this is distinguished from being the right tool for a function, which is relative to a task. An argumentation, then, can be assessed independently in respect of its propositional relations. A good argumentation involves: absence of ambiguity; having no smuggled premises; a conclusion that is a logical consequence of the premises; having a chain of reasoning cogent in context; etc. Of course, assessing an argument involves extracting the propositions expressed by ordinary language sentences and then checking them against the models established by formal logic.

6. Propositions, arguments, argumentations

Philosophers and logicians recognize different definitions of truth. Here we employ a correspondence notion along the lines of Aristotle, Tarski, and others to help assess argumentation objectively. Aristotle considered the truth or falsity of a sentence to depend on whether a given state of affairs is or is not the case, but not that a given state of affairs is dependent on the truth or falsity of a given sentence (see *Categories* 12: 14b14-22). He would also consider the validity of a given argument to have an ontic underpinning, since the ontic nature of the law of contradiction undergirds ‘truth following being’. There is an underlying ontology for truth and falsity and for validity and invalidity that makes impossible that true propositions imply a false proposition and that makes these matters participant independent. This ontology takes argument evaluation out of relativistic considerations and provides for a *formal* assessment.

An object language sentence might express one or more proposition. While a sentence might be ambiguous, a proposition is not. A proposition is true or false just in case the state of affairs denoted by the proposition is or is not the case. A premise-conclusion (P-c) *argument* to be a two-part system consisting in a set of propositions called premises (P) and a single proposition called a conclusion (c). In a valid argument the premise propositions imply the conclusion proposition, the conclusion is a logical consequence of the premises. Another way of

expressing validity is to say that in a valid argument all the information in the conclusion is already contained in the premises (Corcoran 1998). Truth and falsity and validity and invalidity are ontic properties of propositions and arguments respectively. One way to establish knowledge of an argument's validity is to find a chain of reasoning (a derivation) that is cogent in context that helps to link in the mind of a participant the conclusion to the premises as a logical consequence. We define formal derivation as follows:

A given proposition *c* is formally deducible from a given set of propositions *P* when there exists a finite sequence of propositions that ends with *c* and begins with *P* such that each proposition in the sequence from *P* is either a member of *P* or a proposition generated from earlier propositions solely by means of stipulated deduction rules.

Thus, an *argumentation* is a three-part system consisting in a set of propositions called premises, a single proposition called a conclusion (the bounding argument), and a sequence of propositions called a chain of reasoning. If the chain of reasoning is cogent in context and the bounding argument is valid, we have a deduction, otherwise a fallacy. Cogency and fallaciousness are properties of argumentations, not beliefs of a participant.

7. An ontic definition of cogency

With this understanding of argumentation, we can see that a cogent chain of reasoning is an ordered sequence of propositions that are conclusions of elementary valid arguments. Thus, cogency is an ontic property of such a chain. *It is one thing for the sequence to be cogent; it is another thing for someone to understand that this is so.* To affirm that cogency is an ontic property of such a sequence of propositions is to affirm the truth of *the principle of transitivity of consequence*, namely: "every consequence of a consequence of a given proposition is again a consequence of that proposition" (cited in Corcoran 1989a: 34-35). Cogency, then, is an ontic property of a good argumentation, specifically, of a deduction, and its counterpart, fallaciousness, is an ontic property of a bad argument, namely, of a fallacy. This extricates both deductions and fallacies, in respect of their consisting in propositions, from participant relativity and places responsibility for their recognition squarely on participants.

8. Formalist considerations at the core of intelligible discourse

One project of epistemology is to determine means for establishing knowledge of the truth and falsity of propositions. Traditionally this project has consisted in two

processes, induction and deduction. Another project of epistemology is to determine a foundation for, and to discover the means by which to establish knowledge of, *logical consequence*. In this connection, ontology and logic are intimate companions. The contributions of formal logic to the project of establishing knowledge include the following. Formal logic:

- * has articulated the law of contradiction and the law of excluded middle as providing an ontic underpinning for intelligible discourse. These laws relate equally to states of affairs and propositions.
- * has articulated the principle of consistency. This principle equally underlies intelligible discourse and is applicable to various notions of truth.
- * has defined logical consequence as an ontic property existing between propositions. This notion underpins intelligible discourse by which we recognize, for example, the incoherence of a paradox, that true propositions cannot imply a false proposition.
- * has established the principle of form: every argument in the same form as a given valid argument is valid; every argument in the same form as a given invalid argument is invalid.
- * has developed the method of counterargument and method of counterinterpretation to establish knowledge of invalidity.
- * has developed the notion of cogency as consisting in linking the conclusion propositions of elementary valid arguments sequentially in an argumentation, or chain of reasoning. In this connection, formal logic has articulated the principle of transitivity of consequence.
- * has developed the notion of universe of discourse by which one determines what is germane to a specific discourse.
- * has developed a notion of precision in thinking as exemplified in, for example, the ideal of a logically perfect language. The work of semantics and linguistics is important, if only for helping to make more precise the logical form of a given proposition.
- * has established methods that aim at objective knowledge, two of which are the hypothetico-deductive method for disconfirming a hypothesis, or proving it to be false, and the deductive method used in axiomatic discourse for proving a hypothesis to be true.
- * has provided methods useful for discovering hidden consequences of propositions.

Formal logicians develop models – whether of formal or natural languages, of deductive systems, or of argumentations – that serve as *ideals* against which to

assess ordinary language discourse.

9. *Reasserting the epistemic/ontic gap*

Informal logicians have aimed to close the gap between logic and the needs of human beings, but at the cost of eliminating the difference between the *process* of arguing and its context, on the one hand, and the product of such a process, the argumentation itself, on the other. They commit the *process/product fallacy*. And, since a philosophical tenet of informal logic relates to its *context relativism*, their closing the gap between the theory and practice of logic and formal logic's putative irrelevance depends on their adopting a post-modern obliteration of the subject-object distinction that confuses what is known with what is, and thus they are themselves guilty of the *epistemic/ontic fallacy*.

We know that an *ad hominem* argument can be a very effective tool in the hands of an accomplished rhetorician. However, a rhetorician's success *really* rests on at least three factors, all of which pertain to the conditions of a participant:

1. a participant's ignorance of formal logic;
2. a participant's ignorance of facts and information;
3. a participant's lacking a clear commitment to obtaining truth and a willingness to suspend judgment toward that end.

In this connection, then, logicians have two projects:

1. to isolate argumentation as a *part* of persuasion theory; and
2. to apply formal logic to fallacy theory. A constituent part of this work is sharply distinguishing the ontic from the epistemic.

10. *Sketching a fallacy theory*

If sketching a *fallacy theory* includes providing (1) a definition of *fallacy* and (2) a method of formal analysis, then formal logic offers the following definition, alongside *deduction*, *refutation*, and *demonstration*. A fallacy is an argumentation in which one or more of the following occurs:

1. the conclusion is not a logical consequence of the premise-set; or
2. the chain of reasoning is not cogent in context, whether or not the argument bounding the chain of reasoning is valid; or
3. the chain of reasoning is cogent but not in context. These considerations are ontic features of the argumentation that is a fallacy, and thus they are *independent* of participant recognition. Formal analysis of a fallacy might involve any of the familiar methods for determining invalidity and for refutation.

This process (1) is independent of argumentational pragmatics, dialogue rules, and context, and (2) requires extracting an argumentation from a natural language discourse and expressing it precisely with all the tools of formal logic. Using the model of an Aristotelian syllogism, we can show that a fallacy *violates* a valid syllogism *pattern*. In the case of ambiguity, while a given argument with an ambiguity has one grammatical pattern, it really has two underlying logical patterns. And in the case of equivocation, while an argument with an equivocal expression has a given grammatical pattern, it really has, with the addition of a fourth term, an underlying logical pattern different than a syllogism. *Begging the question* might be considered in two ways, neither of which involves fallaciousness.

1. When, among a premise-set, a false proposition taken to be true (or one whose truth-value is undetermined) implies a true proposition, it is a mistake to believe the conclusion to have been proved. Here there is no fallacy or mistake in reasoning. Rather, a participant is ignorant about what counts as a demonstration. Knowing that every true proposition is implied by infinitely many false propositions might help in this situation.

2. When a proposition to be established as a conclusion is itself among the propositions in the premise-set, there is no fallacy. Again there is ignorance on the part of a participant about demonstration. However, here there is a need for a restriction on the deduction system along the lines of Aristotle's requirement for his syllogistic system: the conclusion must extend knowledge beyond what is immediately stated in the premise-set. Finally, the fallacies of *ad hominem* and appeal to authority introduce, or smuggle, additional premises that do not contribute to a conclusion following logically from premises. The other fallacies might be addressed in a similar fashion.

11. Concluding remarks

John Woods and Douglas Walton must feel an intellectual kinship with formal logicians such as John Corcoran because of their equal commitment to objectivity. The question is to what extent is the realization of their commitment compromised by their equally strong commitment to assessing arguments contextually. Their view of the systematic practice of logic seems incompatible with their view of the metasystematic practice of logic. Nevertheless, they expect that discourse on cogent and fallacious argumentation itself be cogent, and Woods (1989, 1994b, 1999, 2000) in particular hold out a place for formal logic in developing a sound argumentation theory with an analysis of the fallacies.

Critical thinking theorists, pragma-dialecticians, and informal logicians have aimed to diminish the gap between logic and the needs of human beings. However, they have also diminished the gap between knowledge and ignorance. We wish to re-assert that gap in respect of

1. knowledge of the truth and of falsity of a proposition,
 2. knowledge of the validity and or invalidity of an argument, and
 3. knowledge of the cogency and or fallaciousness of an argumentation.
- Obscuring this gap is detrimental to human understanding and conflict resolution. Our concern as educators to develop a person's ability to avoid mistakes in the process of drawing conclusions ought to promote their continuing

1. to accumulate knowledge and information and
2. to perfect knowledge of logical consequence. The first project is a matter of science; the second is a matter of formal logic. Mediating conflicting viewpoints is a third matter. Becoming a virtuous person requires developing a lifelong commitment to examination and self-reflection in the pursuit of objective knowledge. Classical formal logic has a *crucial* role to play in that process as it applies to the role of argumentation in everyday life.

REFERENCES

- Allen, Derek. (1994). Assessing arguments. In *NEIL* (pp. 51-57).
- Blair, J. Anthony & Ralph H. Johnson (Eds.). (1980). *Informal Logic: The First International Symposium*. Pt. Reyes, CA: Edgepress.
- Blair, J. Anthony. 1995. The place of teaching informal fallacies in teaching reasoning skills or critical thinking. In *FCCR* (pp. 329-338).
- Boger, George. (1998). Aristotle on fallacious reasoning in Sophistical Refutations and Prior Analytics. *Argumentations and Rhetoric* (CD-ROM), 1997 OSSA Conference Proceedings. St. Catherines.
- Corcoran, John. (1989a.) Argumentations and logic. *Argumentations* 3, 17-43.
- Corcoran, John. (1989b). The inseparability of logic and ethics. *Free Inquiry* 9, 37-40.
- Corcoran, John. (1998). Information-theoretic logic. In Martinez, C., U. Rivas, & L. Villegas-Forero (Eds.), *Truth in Perspective* (pp. 113-135). Aldershot, England: Ashgate Publishing Limited.
- FCCR*. Hansen, Hans. V & Robert C. Pinto (Eds.). (1995). *Fallacies: Classical and Contemporary Readings*. University Park, PA: The Pennsylvania State University Press.
- Finocchiaro, Maurice A. (1994). The positive vs. the negative evaluation of

arguments. In *NEIL* (pp. 21-35).

Finocchiaro, Maurice A. (1995). Six types of fallaciousness: toward a realistic theory of logical criticism. In *FCCR* (pp. 120-129).

Freeman, James B. (1994). The place of informal logic in logic. In *NEIL* (pp. 36-49).

FSP. Woods, John & Douglas Walton. (1989). *Fallacies: Selected Papers 1972-1982*. Dordrecht, Holland: Foris Publications.

Govier, Trudy. (1987). *Problems in Argument Analysis and Evaluation*. Providence, RI: Dordrecht-Holland.

Govier, Trudy. (1995). Reply to Massey. In *FCCR* (pp. 172-180).

Hamblin, C. L. (1993). *Fallacies*. Newport News, VA: Vale Press.

Hansen, Hans. V & Robert C. Pinto (Eds.). (1995). *Fallacies: Classical and Contemporary Readings*. University Park, PA: The Pennsylvania State University Press.

Hitchcock, David. (1995). Do the fallacies have a place in the teaching of reasoning skills or critical thinking?. In *FCCR* (pp. 319-327).

IL. Blair, J. Anthony & Ralph H. Johnson (Eds.). 1980. *Informal Logic: The First International Symposium*. Pt. Reyes, CA: Edgepress.

Johnson, Ralph H. (1995). The blaze of her splendors: suggestions about revitalizing fallacy theory. In *FCCR* (pp. 107-119).

Johnson, Ralph H. & J. Anthony Blair (Eds.). (1994). *New Essays in Informal Logic*. Windsor, ON: *Informal Logic*.

Johnson, Ralph H. & J. Anthony Blair. (1980). The recent development of informal logic. In *IL* (pp. 3-28).

Johnson, Ralph H. & J. Anthony Blair. (1980). Introduction. In *IL* (pp. ix-xvi).

Johnson, Ralph H. & J. Anthony Blair. (1994). Informal logic: past and present. In *NEIL* (pp. 1-19).

Kahane, Howard & Nancy Cavender. (1998). *Logic and Contemporary Rhetoric: The Use of Reason in Everyday Life* (8th ed.). Belmont, CA: Wadsworth Publishing Company.

Massey, Gerald J. (1995). The fallacy behind fallacies. In *FCCR* (pp. 159-171).

NEIL. Johnson, Ralph H. & J. Anthony Blair (Eds.). (1994). *New Essays in Informal Logic*. Windsor, ON: *Informal Logic*.

Pinto, Robert C. (1994). Logic, epistemology and argument appraisal. In *NEIL* (pp. 116-124).

Priest, Graham. (2000). Truth and contradiction. *Philosophical Quarterly* 50 (200), 305-319.

- Scriven, Michael. (1980). The philosophical and pragmatic significance of informal logic. In *IL* (pp. 147-160).
- Tindale, Christopher W. (1994). Contextual relevance in argumentation. In *NEIL* (pp. 67-81).
- Toulmin, Stephen. (1958). *The Uses of Argument*. Cambridge: Cambridge University Press.
- Van Eemeren, Frans H. & Rob Grootendorst. (1992). *Argumentation, Communication, and Fallacies: A Pragma-Dialectical Perspective*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Van Eemeren, Frans H. & Rob Grootendorst. (1995). The pragma-dialectical approach to fallacies. In *FCCR* (pp. 130-144).
- Walton, Douglas N. (1987). *Informal Fallacies: Towards a Theory of Argument Criticism*. Amsterdam: John Benjamins Publishing Company.
- Walton, Douglas N. (1989). *Informal Logic: A Handbook for Critical Argumentation*. Cambridge: Cambridge University Press.
- Woods, John & Douglas Walton. (1989). Introduction. In *FSP* (pp xv-xxi).
- Woods, John & Douglas Walton. (1989). On fallacies. In *FSP* (pp. 1-10).
- Woods, John & Douglas Walton. (1989). *Fallacies: Selected Papers 1972-1982*. Dordrecht, Holland: Foris Publications.
- Woods, John. (1980). What is informal logic?. In *IL* (pp. 57-68).
- Woods, John. (1989). The necessity of formalism in informal logic. *Argumentation* 3, 149-167.
- Woods, John. (1994a). Sunny prospects for relevance?. In *NEIL* (pp. 82-92).
- Woods, John. (1994b). Is the theoretical unity of the fallacies possible?. *Informal Logic* 16:2, 77-85.
- Woods, John. (1995). Fearful symmetry. In *FCCR* (pp. 181-193).
- Woods, John. (1999). Aristotle (384-322 B.C.). *Argumentation* 13: 2, 203-220.
- Woods, John. (2000). How philosophical is informal logic?. *Informal Logic* 20:2, 139-167.
- Woods, John. (2001). *Aristotle's Earlier Logic*. Oxford: Hermes Science Publishing Ltd.
- Wreen, Michael. (1994). What is a fallacy?. In *NEIL* pp. 93-102.